



Computer Weekly

Thursday, October 6, 1983

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Ministers talk software money

by John Kavanagh
TOP government ministers are meeting this week to consider putting more money into the Software Products Scheme, just six months after the budget was more than doubled with the addition of £15 million.

The extra backing is needed because the total value of projects being put up for funding is running at £500,000 a day. The scheme pays up to a third of product development costs.

"We have told the government that we would need to apply for more funds by the end of the year," said David Rates, chairman of the Software Products Scheme Advisory Committee.

"Some believe that the £25 million we have received in the last

two years is a lot for software, especially when compared with what other industries get - but the government now realises just how fast the industry is expanding."

David Elze at the National Computing Centre, who runs the scheme for the government, said: "We can certainly see the end of the current funding."

Elze said applications had been running at the current rate for three months. Just over 100 grants had been approved. If this continues, the budget would have to go up to £40 million a year - only £20 million less than the entire Alvey Programme.

Rates and Elze said there should be no funding links between the scheme and Alvey. "We have made noises about liaison on de-

velopment but funding should be separate," Rates said.

"Alvey is about long-term research and development; the Software Products Scheme is about getting products on the market."

Elze added: "We hope our work is consistent with the Alvey aims, but we don't want to dilute our funds if an activity is already covered by government backing. For example we have stayed out of robotics because it is funded by other schemes."

Doug Eycions, director-general of the Computing Services Association, said: "When the scheme was announced, some cynics said the industry wouldn't be able to take up all the money. They have been proved wrong."

■ Leader comment - page 17.



RATES... "Government realises how fast the industry is expanding."

HP makes a personal promise

by Nuala Moran
ED McCracken, manager of the Lett-Packard's business development group, told users of company's minis that HP is committing itself to the personal computer market.

He was speaking to over 40 delegates at the HP3000 International User Group conference in Edinburgh on Monday. He said: "In future the 300 will be a top controller," but he added: "though it was obvious to most of the personal computer users still be a need for the 300's more powerful minis. The 300 will be part of a network of workstations on every desk."

In the shorter term HP is forecasting that the HP 300 population will jump from 100,000 to 200,000 by the end of 1984.

At the moment HP has a district computer family of company plans to split it into two families. One family will be models up to \$10,000, other models from \$10,000 to \$100,000.

McCracken said that the HP 300 computers would be 80% of the market. He added: "HP will design a computer which is more than \$300,000 for a system."

Another change McCracken outlined is a switch to more architecture: "We believe we no longer be the only supplier for our products. We are opening up systems to other companies can help."

But HP also has a software solutions. "We have moved over 1,000 people into software sections," McCracken said. "We are also making software easier to write or use that you can buy it off the shelf."

Users protest in unison on standards

by John Riley
COMPUTER users are banding together to make their voices heard on international standards bodies - with help from the UK government.

The IT Users Standards Association is to be set up early next year backed by the Department of Trade and Industry with the aim of making the users views paramount when computer and telecommunications standards are set.

The impetus for the association came from Eric Howe, chairman of the Users Committee of the Department of Trade and Industry's Focus Group, set up to examine British attitudes to standards. The association will be helped off the ground by the National Computer Users Forum, which is a grouping of computer users associations, also chaired by Howe.

"We want to ensure that standards are properly drafted from a user and manufacturer's point of view," said Howe, "with the users' view paramount. But draftings need to be tight enough for manufacturers to implement them."

According to John Foote, head of the full Focus Committee, the IT Users Standards Association will be set up early next year "depending on a reasonable indication of interest and financial commitment from industry." The Association will comprise individual companies which will push for more user representation.

One of the plans being mooted is for the top 100 UK user companies to spend £1,000 a year each - a fraction of what they are now wasting because of inadequate standards - which would be put in a kitty to enable British experts to attend international standards drafting committees and help create effective standards where it counts.

At present, most experts have to

attend standards drafting committees: "It is left to a few enthusiasts to raise their own money to express users' views," said Brian Meek, director of Queen Elizabeth College London's Computer Centre, and member of the recent SC5 programming language standards committee meeting in Ottawa.

Meek is sceptical about the new Association: "I'll believe it when I see it," he said. "The government has shown in the past that it recognises the importance of standards, especially in the military area, but now it is leaving things up to industry even though it is one of the biggest computer users and would benefit considerably by the savings that better standards would bring."

Foote acknowledges the current funding problems, which means that only heads of delegations, ISO convenors and a limited number of other categories can attend a

limited number of standards meetings - in practice one per meeting - for areas such as programming language standards and character recognition. However, he points out that a broader number of people can be funded directly by DoTI to push the British view ("as opposed to personal or company views") at Open System Interconnection standards meetings, a concession wrested from the DoTI.



HOWE... "Users' view paramount."

DEC may lose its 11 dealers

DIGITAL Equipment risks losing its 11 UK authorised computer distributors if it continues to compete with them for end user business. That is the message the distributors will give their supplier at a two day meeting with top DEC management next week.

"The 11 of us represent 20% of the entire UK turnkey systems market," said Hoskyns marketing director Richard Holway. "DEC is ignoring us - and we're being courted by other manufacturers. If DEC doesn't rethink what it's doing, we'll go elsewhere. It's a crying shame that the authorised distributors should be in competition with their supplier."

Software schemes

GOVERNMENT ministers last week agreed that the Software Products Scheme should continue - but did not vote on any extra funding. The total value of projects being put up for 33% funding is running at £500,000 a day. This means the budget needs to go up from £15 million this year to £40 million a year.

The Computing Services Industry was satisfied with the outcome of the ministers' meeting. "It looks as if topping-up money will be available," said director general Douglas Eycions. "And industry secretary Cecil Parkinson has said he will support services industries and technology industries."

Privacy changes

THE government is to put forward amendments to drop the exclusion of payments subject to immigration control from the Data Protection Bill. They will be debated in the House of Lords, where the bill has reached the report stage, when Parliament resumes on October 24.

Electronic vandals strike at the BBC's live Gold

by John Kavanagh
JOKERS interrupted a live television programme on computing last Sunday by apparently hijacking British Telecom's message service, Telecom Gold.

But British Telecom said that despite the intruders' claim that they had cracked the password, the Telecom Gold security had not been breached.

Presenters on the BBC's Microlive programme linked to Telecom Gold were interrupted by a message reading: "I hope your television programme runs as smoothly as my program worked out your passwords. Nothing is secure."

But BT said the password had not been worked out by a computer. Instead it was an inside job: someone had told the intruders the password which would be used. And the intruders themselves were Telecom Gold users.

They had called their own

electronic mailbox, and then used the presenter's password to get to his mailbox, which featured in the programme.

"British Telecom Gold detected and recorded the incident, identifying the intruders," the corporation said.

"We assure serious users that the security is robust."

"We regret this electronic vandalism, which damages the credibility of the service."

BT added that the intruders had been cut off the service and "given a stern warning."

"The jokers signed themselves The Nutcracker (Hackers UK) and added a poem called The Hacker's Song."

Hacker is a name for computing enthusiasts who tap into computers and networks. They use private and public networks illegally to send each other messages.

"Telecom Gold runs on a Prime minicomputer in London. There are about 4,000 mailboxes.

Marconi Instruments buys Quest CAE for over £2m

by Keith Holder
QUEST CAE, which went into receivership in August has been bought by Marconi Instruments for over £2 million.

Colin Gaskell, managing director of Marconi Instruments, said: "This will extend the market for products from both parties. We have been customers for over eight years and consider the Quest product line a very good one."

He added that the purchase was in with their own plans to become more involved in computer aided engineering (CAE).

"There was some soul searching on our part to see exactly what our business is. We concluded that, in solving our customers' problems, CAE is part of the equation."

Not all of Quest was bought, though Marconi is still negotiating for some of the assets. An investment package of about £1.5 million was also announced.

Part of Quest Genesys, a division of Quest CAE, has already been bought by three former company executives who have set up General and Technical Systems and offer microcomputer software for construction industry applications.

Quest CAE was part of Quest Automation, a public company in which the British Technology Group has a strong interest. Trouble began for Quest CAE when high R&D costs forced Quest Automation to sell its controlling interest to two Arab investors in February. The £2 million raised for 51% of the company was used to help meet R&D costs.

This was subsequently raised to 61% but in August Quest CAE was forced to call in the receiver.

Plans for the company under its new owners have not been finalised, said Gaskell, "though there is no question of it simply being absorbed. It will continue to trade as a separate business, benefiting from our customer base and technological requirements."

"There is a lot of common ground," said Gaskell. "We see a growing market for this technology in our future systems."

Another change McCracken outlined is a switch to more architecture: "We believe we no longer be the only supplier for our products. We are opening up systems to other companies can help."

But HP also has a software solutions. "We have moved over 1,000 people into software sections," McCracken said. "We are also making software easier to write or use that you can buy it off the shelf."



GASKELL... "Extending the market for both parties."

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IT Panel wants a campaign

by Donald Kennett
A MILLION people handle "tradeable information" in the UK according to the Prime Minister's IT Advisory Panel, ITAP. Companies dealing in information make a fast growing contribution to the country's balance of payments.

In its report published last week, Making a Business of Information, the panel presses for an awareness campaign like Information Technology Year.

"Our aim was not to lay down rules, but to increase awareness of the commercial value of information," said Colin Southgate, chief



SOUTHGATE... No rules.

executive of Thorn-EMI's IT division and leading proponent of the study from the seven-man panel.

ITAP's first report, on wideband cable systems, stimulated a public debate and led to some of the speediest government action seen since the Second World War, according to the panel. This second report is intended to be a similar catalyst.

BT suspends protesting union men

by Nuala Moran
ABOUT 2,500 British Telecom engineers were suspended without pay on Monday for taking part in industrial action against the private telecommunications company, Mercury, and the government's plans to privatise BT.

Of those suspended, around 1,400 work on international exchanges.

They were suspended by BT after refusing to sign an undertaking to end a work to rule which the Post Office Engineering Union (POEU) claimed had affected services to 60 out of 130 countries.

BT issued a statement on Monday afternoon saying that normal services had been restored on international lines with management doing essential maintenance.

Management took over maintenance of three international exchanges on Saturday and POEU

members were sent home. Staff reporting for work on Monday were instructed by BT to go to various centres to sign the undertakings to obey management instructions.

The POEU countered by picketing the centres and calling a meeting at the Mermoid Theatre in London.

According to a POEU spokesman, only six or seven engineers signed the undertaking to work normally and the rest were sent home. BT considers them to be on strike.

A further 900 to 1,000 engineers who have been refusing to work for Mercury's three shareholders, BP, Cable and Wireless and Barclays Bank were suspended by BT.

The engineers concerned work in the City of London, Westminster, the Post Office Tower

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New-look BTG gets research role

by John Kavanagh
THE government's British Technology Group is dropping its role as a company backer and concentrating on putting industry in touch with good ideas from researchers.

The BTG's National Enterprise Board will continue to sell its shares in companies and will only back new firms if they are turned down by all other sources of finance.

The announcement by Trade and Industry Secretary Cecil Parkinson was welcomed cautiously by the computing industry. Some computing firms have had considerable backing from the National Enterprise Board - and a lot of university research is in computing and could lead to products.

The new-look BTG will keep in

touch with research work, especially at universities, and help evaluate its potential in the market.

It will advise researchers on patents and put them in contact with industry and financiers. Start-up cash will be provided for small firms, such as those based just on the researcher - but only as a last resort.

Meanwhile the BTG will sell its interests in firms ranging from software house CAP and systems builder Systime to British Telecom. One estimate puts the value of these assets at well over £11,000 million - six times the amount raised by the government in its 1979-1982 term of office.

Once these assets are sold, BTG will aim to become self-financing through income from its technology transfer work.

The Department of Trade and Industry said there was no pressure on BTG to speed the sale of its assets. The sale would go ahead as quickly as possible but BTG would have to bear in mind the interests of the company involved and aim to get the best return on the taxpayer's investment.

Parkinson's announcement had caused anxiety. Dr Chris Cook, assistant industrial liaison officer at Bradford University, said: "We've been most impressed with BTG. They've always given us a very sympathetic hearing, put us in touch with people and provided backing."

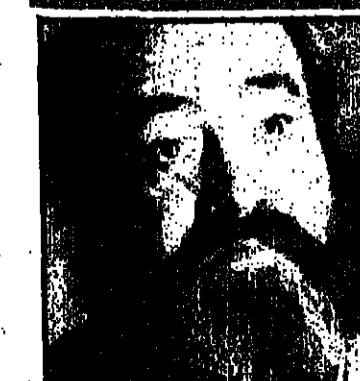
"They've been a bit slow - but perhaps they will react more quickly now."

"Academics with good ideas do not have the time or money to spend talking to companies. They need someone with financial clout and good contacts."

David Thomson, managing director of software firm SPL, said: "There's certainly a need for a clutch between the engine of invention and the reality of the marketplace. But the National Research Development Council has only come up with a very small number of winners."

Thomson indicated that SPL would prefer a UK interest to buy the BTG's 40% in the company. The other 60% is owned by a Canadian company.

"Most of our 500 staff are British," he said, "and we have a close business relationship with the UK government."



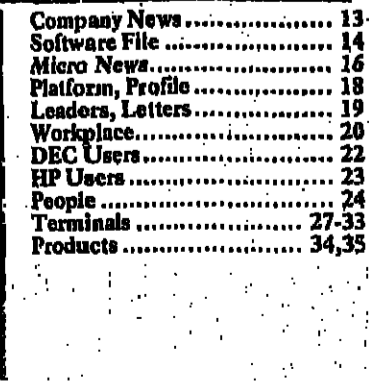
Why Wilkinson and Decus like DEC 22



ICL's Piggott wants more third parties 4



Light works for UK breakthrough 3



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Now EEC may slash Esprit IT

by John Riley
THERE is now a real danger that the European Community budgetary crisis will engulf the 1990 million Esprit IT research programme. On top of that threat, recent political manoeuvring has endangered the programme's 1985 budget.

Despite the speed with which the Esprit programme has gone through the stages towards implementation - it gained the unanimous support of EEC industry ministers late last month and is assured acceptance by the European Summit in Athens in December - it is quite possible that it will not get cash for 1984.

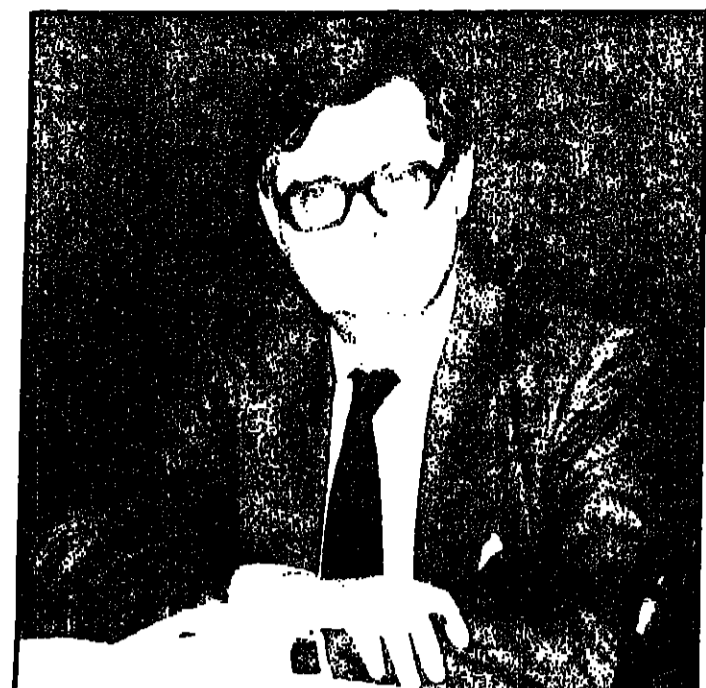
Speaking in London recently, Horst Hünke, manager of the Esprit programme, said: "The political will is there, but if as a result of the budgetary proposals new projects have to be stopped, then Es-

prit will not get off the ground - that is how the EEC financial regulations work - there are no exceptions."

The problem is that the European Commission is overcommitted on agricultural payments and its overall budget, which comes from 1% of Europe's VAT payments, is suffering because the VAT receipts are down.

In December, the European Parliament has to decide whether to scrap new projects to pay the agriculture bill, or whether agriculture should take cuts too. The latter course is unlikely, according to reports.

A further problem has been that the recent Belgian postal strike has held up plans for co-ordinated collaboration between the Commission and European industry to design tender documents for the five subject areas covered by the main



HÜNKE... "There are no exceptions."

Esprit programme.

The 1985 budget commitment for Esprit was slashed from £160 million to £60 million by the Council of Ministers (which includes Ken Baker, the information technology minister), partly because it disagreed with the number of administrators wanted by the Commission to run Esprit and partly to force the European Parliament to decide on its priority project.

The European Parliament recently restored the 1985 commit-

ment, but the row over the Commission's demand for 91 staff to run Esprit continues.

"In particular the French and the UK governments want the project but they don't want to see the European institutions strengthened at the expense of national governments."

"And they want to keep the number of European civil servants down," said a European parliamentary commentator last week.

Honeywell partners faces liquidation after court action

by John Kavanagh

A PARTNERSHIP between US giant Honeywell and a UK software house has ended up with a £250,000 High Court action and the UK firm on the verge of liquidation.

The company, Datawell, says it is owed about £25,000 by Honeywell for work done - and that payment would enable it to clear its debts. Honeywell is counter-claiming a similar amount in computer rental.

But Honeywell is also claiming £250,000 in damages for Datawell software which allegedly did not perform. Datawell has its own claim for "unqualified damages" against Honeywell.

The story began in 1978, when Datawell was formed purely as a Honeywell specialist software house. The companies agreed to work together throughout the UK, with Datawell staff working in Honeywell offices to produce applications software for the US manufacturer's users.

"The emphasis was on us being partners," said Datawell director Robert Flint. "We made it clear to Honeywell that we couldn't succeed without its full co-opera-

tion throughout the country.

"But that commitment didn't materialise: the agreement reached centrally but when started working, Honeywell's regional offices didn't want to know."

Datawell stopped trading in 1981 and has been attempting to settle with Honeywell ever since.

Datawell installed a Honeywell Level 62 computer at the firm's northern headquarters in Cheshire. When the machine broke, Honeywell claimed the rental of some £20,000 and £25,000.

This week the Companies and Chancery court in London ruled in favour of Datawell, ordering Honeywell to pay £25,000 in damages.

Honeywell said the matter was in the hands of its solicitors and only comment was: "Honeywell, considering its position in regard to pursuing a substantial debt against Datawell in respect of losses arising from work done that company."

The user-affected debt action firm Legal and Trade Options of Preston, refused to comment on the case.



LIGHT... "No hesitation on joint ventures."

Northern Telecom bids for UK breakthrough

by Donald Kennett

THE Canadian-based Northern Telecom is making a major investment in the UK in the hopes of breaking into the UK public telecommunications market. It is to spend \$20 million to expand Northern Telecom's UK development and production facilities.

The first major products to be developed and made here will be the company's SL-10 packet switch, which it hopes will win British Telecom's tender competition to replace the PSS public data network, and the DMS (Digital Multiplex Systems) range of digital public telephone exchanges and transmission systems.

The Canadian company hopes this will be its first choice for an alternative digital technology to System X.

Hugh Hamilton, European president for telecommunications, said that UK industry had insuffi-

cient development and production capacity to achieve BT's target of full digitalisation of the network by 1992.

Besides which, he added, BT may wish to avoid being the captive user of a single domestic supply consortium for systems that were crucial to its future.

With the tenders for PSS now being evaluated, Northern Telecom has obviously picked the right moment to prove itself a good UK citizen.

But according to Hamilton the investment decision was made before the PSS tenders were invited, although it had been clear to the company that BT was going to have to consider such a move because of the problems it was having with providing the capacity to meet demand.

Chairman and chief executive Walter Light stressed that the company had had no assurances from the UK government or from BT that it would be able to break

into the UK public telecommunications market.

The level of business already being done in other areas would justify the investment anyway, he said.

Northern Telecom has operated in the UK for eight years and now employs 330. Over the last five years it has invested \$20 million and earned \$132 million in the UK.

It is currently developing a range of data systems for the European market, which it aims to launch during the next few months.

Last month it won limited approval from BT to supply 1,000 units of its Displayphone voice and data terminal to the private market while development work continues.

The company has already sold its DMS-1A digital transmission system to BT, as well as other items including six administration and test systems which are being

evaluated under an £80 million modernisation programme for BT's 360 repair centres.

Elsewhere in Europe it has sold SL-10 packet networks for public service in five countries including West Germany, Switzerland and Austria.

Private sector sales of SL-10 include BT Systems in the UK.

NT has also licensed GBT to manufacture and market its SL-1 digital PAUX and Light said that the relationship with GBT would continue.

Other partnership deals may be struck too. "We have no hesitation on joint ventures at all," Light said.

"We developed a lead in advanced fully digital telecommunications technology that is two or three years ahead of any company in the world," Light said.

"We have maintained that lead, particularly in the software as well as the hardware of our systems, he continued."

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ICL extends its third party plan

by Andrew Thomas

ICL is trying to double the number of third party companies selling its products. Under new terms drawn up under the Tradepoint scheme it has also extended the products third parties may sell right to the top of the ICL range.

The company hopes the new terms will attract a further 500 dealers by 1985. This would make a worldwide total of 1,000.

Those dealers could be selling almost any ICL product according to Tradepoint boss Ray Piggott. "There's no reason why Atlas shouldn't be sold through Tradepoint," said Piggott. "There's no restriction, it just hasn't been done yet."

The revised terms of trade for ICL's dealers include collaboration deals which will allow software houses access to ICL system software for the first time. This means that modifications to the VME

2900 operating system can now be carried out by third parties.

Asked how ICL could police what modifications were being carried out and by whom, Piggott would not commit himself, saying that lines would have to be drawn between ICL products and non-ICL products.

This de-restriction of ICL code is an about-face for the company, which only recently amalgamated the diverse operating regimes available for the 2900 range into a single, unified product.

The changes to the Tradepoint terms, which come two years after the scheme's inception, make it easier for dealers to obtain discounts of up to 30%. A major change involves international trading agreements whereby dealers operating in more than one country will qualify for discounts based on their total business rather than on sales in each geographical area,

as was previously the case.

A new value-added clause allows dealers to bundle hardware and software from other manufacturers with ICL products in order to provide a broader and more attractive product line. The clause is aimed at removing the conflict of interests between Tradepoint dealers and ICL's own sales force.

One such system involves a package from Reading-based Intec which enables up to five point of sale terminals to be supported by an ICL personal computer.

"We're aiming to consolidate the programme," said Piggott. "We've moved very fast and now we're looking for a lot more software collaborations. This is reflected in our decision to be represented at the International Business Show by Tradepoint dealers with added value packages."



PIGGOTT... No restrictions - not even on Atlas.

The City goes abroad for network

by Donald Kennett

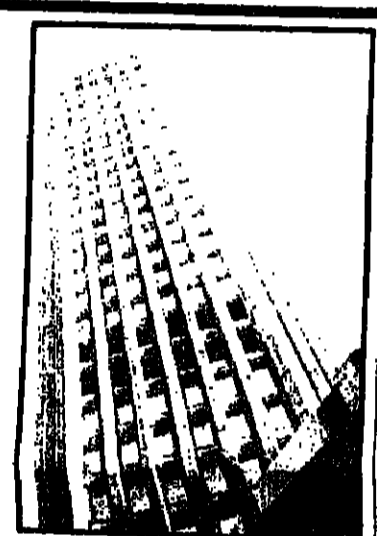
THE Stock Exchange is to seek foreign suppliers for the private packet network that will distribute all its future electronic information services.

Technical services director George Hayter said last week that teams of engineers had been sent to Japan and Sweden to evaluate prototype systems in their final stages of development. He declined to name the suppliers.

The Stock Exchange's IDN (Integrated Digital Network) project is now being installed after two years of planning. Trials with a small number of users are to start early next year, and a full service operation is expected in 1985.

The first application for the network will be to link brokers to the new gilt-edged securities settlement system being developed jointly by the Stock Exchange and the Bank of England. Packet switching exchanges in two separate buildings will be linked by high-speed lines to the two Tandem non-stop minis running the gilt system.

"They will be connected and



The Stock Exchange is going foreign.

cross-connected in expectation of the time when one of them goes wrong - as we're sure it will eventually," Hayter said. "The service is being set up in a general purpose way so that the terminals and the network can be used for other computer-based services in the future."

The IDN is designed to be the data equivalent of the 5,000-line private telephone network that has linked the Stock Exchange and its members for a number of years. It was an obvious need, Hayter said, and he had only been waiting for cost-effective technology and a suitable application to start it with. The Exchange's existing services are all distributed to users via dedicated leased lines.

Success story micro firm to go small after takeover

by Philip Hunter

ORIC Products, the fast-growing UK micro maker, has been taken over by the former property company Edenspring Investments. The deal will bring ORIC the cash to finance a new range of micros and other products which will take it into the small business market.

ORIC was founded in 1982 and at present has just one product, the Oric home computer. It retails at £140 and competes with the Sinclair Spectrum and the Commodore 64.

The company has already sold 100,000 micros since the launch late last year, and £4.6 million in

the six months ending June 1983. Over 50% of the sales were exports, and the Oric 1 is already the biggest selling micro in France.

The deal involves an exchange of shares, with the six Oric shareholders, including three directors, being given shares in Edenspring worth £5.85 million.

Oric chairman John Tullis describes the deal as a marriage of convenience. "Edenspring is twice as big in asset terms, but not in profitability," he says.

Tullis says the deal gives Oric extra credibility through being linked with a publicly quoted com-

pany, and through obtaining access to extra cash.

Oric does not have the trading record to go for a stock exchange listing itself, and is too late to come on to the Unlisted Securities Market as a concept stock, which means selling shares to the public on the strength of a new product not yet released.

Edenspring joint managing director Temple Melville says the takeover was inspired by Oric's intention to extend its range of products and enter the business micro market. "We didn't want to be involved with a one-product company," Melville said last week.

Software house joins Pick ranks

by Claire Gooding

ANOTHER software house has joined the growing ranks of Pick systems suppliers. Simdell, based in Coventry, has released the Libra accounting system, said to be so flexible that it can cater for almost any accounting problem.

"We think it's a packaged concept which is unique," said Simdell sales manager John Errington. "It's very much a financial director's tool." The package works on the General Automation

Zebra machine, which runs the Pick operating system on its three levels, the 1500, the 2500/3500 and the top-end 5500.

The accounting package is part of a three-point plan to attack the Pick market. Libra Order Processing and Libra Payroll are due by the beginning of next year.

"We chose the Pick operating system as a vehicle because people are becoming aware of the benefits the system offers. It is genuinely transportable between eight or

nine different types of hardware, and the market is much bigger for us than if we specialised in one particular manufacturer," explained Simdell managing director Peter Westwood.

"We looked at Unix but our view was that Pick was better suited for commercial applications. From the technical point of view, it allows the package to be totally customised: it's a delight to say yes, when a customer asks for a particular something."

IBM could split its business in quest for profits

by Bohdan Szuprowicz

IN a recent TV programme in America three panellists from the investment community were asked to name a company whose stock they would buy if they knew in advance that they would not be able to sell it under any circumstances for the next 10 years.

"It would have to be IBM," answered the first panellist without a moment's hesitation. He was Frank Cappiello, sometimes called the dean of American financial analysts.

The others agreed, naming as second choice Intel and AT&T respectively.

Pressed to justify their choice, the panellists pointed out that these three companies are the world leaders in computers, micro-electronics, and telecommunications; the technologies that are profoundly affecting our society; and are in the process of merging together into an information processing environment of the future.

While these technologies are becoming increasingly intertwined,

there are many signs that the leading companies are moving in the opposite direction.

AT&T is being splintered apart under the anti-trust hammer, but the financial analysts are not unhappy about that. The developing consensus seems to be that the constituent parts of AT&T colossus may grow faster in the rapidly expanding high technology markets and will be worth more than the whole.

More intriguing was a suggestion by Cappiello that IBM is such a good investment because it may also see future synergy in spinning-off some of its operations in rapidly growing high technology market sectors.

In other words, what the US Justice Department was unable to accomplish in its prolonged anti-trust proceedings IBM may bring upon itself voluntarily in quest of greater profitability.

Seemingly a preposterous idea, it is not without merit. IBM is a \$35 billion giant already, and even if it splits several ways each of the resulting companies could be

structured in such a way that it will be larger than its nearest competitor. The reorganisation of IBM last year into seven independent business units, which the company itself calls "business within the business", only adds credibility to IBM spin-off speculation.

Then there is the huge research and development expenditure which came to \$2.1 billion in 1982 and could well reach \$3 billion in a year or two as IBM tries to keep ahead in the innovation race. This comes to more than the rest of the computer industry spends on R&D put together, and while it is the envy of its competitors it may well start seriously eroding some of the profits as the costs of capital are increasing and complexity of the fifth generation computing demand even higher expenditures than ever before.

Should IBM decide to split, its R&D effort could be turned into a series of R&D limited partnerships attached to each constituent company and financed by outside investors. Under the IBM R&D logo, such financings would be

snapped up in no time by knowledgeable institutions, relieving IBM from diverting a part of its revenues into R&D and having a positive effect on profitability.

Successful financing of R&D in this form by companies such as Trilogy Systems and Storage Technology augurs well for such an approach, and could not have been missed by IBM financial strategists.

The creation of IBM Credit Corporation, which already finances operations through public and private debt arrangements could already be viewed as another step in this direction. Since financial services are also a supergrowth industry in their own right, one should not be surprised if a global IBM financial services network came into being helped along by the existing Information Services Network and Satellite Business Systems in which IBM shares financial interest.

The major question to be answered is which business areas are likely to be the initial targets of any

IBM spin-off. The recent announcement that IBM raised its investment in Intel to 15.5% and in Rolm to 17.7% could be an indication that integrated circuits manufacture and telecommunications might be the first two industries in which IBM could establish a distinct presence by merging its internal activities in those areas with each of the two firms.

Biomedical systems, industrial automation and robotics, and instrumentation increasingly crucial in testing the complex circuitry of tomorrow may present other opportunities for creation of IBM spin-offs and this is reinforced by the fact that these are the areas in which the new independent business units came into existence.

But there may yet be another compelling reason for IBM to spin itself out into rapidly growing constituent parts. Over 51% of IBM's stock is now owned by about 1,600 institutions worldwide, many of which would be more than happy to increase their holdings in the premier company of this century if they could.

SALES BRIEF

Marconi wins defence orders

MARCONI has just announced two big defence orders, totalling £3.5 million, including a £1.2 million order from the Greek Navy to enhance an existing communications system. The larger order, worth £2.3 million, comes from the Ministry of Defence for 100 AD2770 navigational systems to be installed on line-line aircraft.

Marconi Avionics has been supplied 750 RAF aircraft with the AD 2770 tactical air navigation system, earning a total of £17 million.

If a bomb falls

FISHER Controls has ordered £600,000 worth of "nuclear hard" digital displays from Compagnie Techniques de Billingham, Essex, for incorporation in a system for measuring radiation level after a nuclear attack. The Dosimetry system has been developed for the Ministry of Defence to the NATO standard Stanag 2083.

Poly goes Norsk

NORWAY'S leading computer maker Norsk Data has taken a £380,000 order for three superminis from Thames Polytechnic. The three ND-560/CXAs will be linked over three sites using the ND-Comos networking system for teaching computer aided design, and processing and business studies.

Embossing export

NATIONAL Business Systems the Surrey-based maker of postcard based information systems exporting two computerised systems for embossing bank cards to Australia. The contract, worth nearly £500,000, will bring the first embossing systems to the Southern Hemisphere.

PABX partners

HARRIS Systems, the Shropshire-based subsidiary of the US Harris electronics group, has gone into partnership with N. G. Bailey, the £75 million privately owned UK electrical contractor, to supply and install PABX telephone systems. The move enables Harris to offer complete installations based on its D1200 PABX, and the first £1 million order has been taken by NGB from the South Wales Constabulary, with Harris acting as prime contractor.

Littlewoods win

MICRODATA Information Systems of Hemel Hempstead has won a £500,000 order from the Littlewoods organisation for its Sequoia superminis. The system will be used for payroll, personnel records and general ledger.

Micro training

THE Manpower Services Commission has hired JB Microsystems to give further training to its staff in industrial microcomputer applications. The MSC already has 180 micros supplied by JB in its 18 centres for training maintenance course.

Super sale

CRAY Research has sold a second supercomputer to the US Weather Electric Corporation for \$1 million. For installation early next year. The machine, a Cray-2S, will be used to provide additional number crunching clout to the manufacture of high technology products, including nuclear reactors and nuclear fusion equipment.

£500,000 net

QUORUM Computers of Southampton has won an order worth almost £500,000 from the Scanian electronics group Scan Electronics for the Q-Lan local area networking system.

Academics wait for DoTI cash

by John Kavanagh

A PROJECT aimed at bringing UK university software to market through services firms is hanging on a government decision whether to back the project to the tune of £16,800.

Final proposals for a £35,000 survey of university software were put to the Department of Trade and Industry this week by National Computing Centre director David Fairbairn.

But in the meantime it emerged that the government's British Technology Group had offered to put up £10,000. The NCC and the universities would fund the balance of £8,200 in the form of administration of the project.

"I believe there is a very impor-

tant task to be done and an opportunity will be missed if an activity is not now mounted to develop links between universities and industry," Fairbairn told the department.

He said the universities were committed to the project but needed external support to see it through. He said there was a "potentially large market" to be exploited.

Fairbairn was optimistic about getting the department's blessing. He has already talked the project over with Alistair McDonald, a senior civil servant in the department's Information Technology Division. McDonald was "happy with the idea,"

Eric Johnson, the man behind

Monopoly breaker gets into electronic mail

by Howard Karten

MCI COMMUNICATIONS Corporation, the company which in effect broke AT&T's monopoly on long distance telephony, last week announced another innovative electronics-based service: it is entering the electronic mail business in an interesting, hybrid sort of way.

MCI will offer an electronic mail service combining elements of analogue and digital messages, as well as elements of standard electronic mail and the overnight package delivery business.

Thus, message senders will be able to specify one of four different delivery modes for their messages. Recipients with MCI Email accounts (and therefore, presumably, computers or terminals) can get instant access to a message.

Alternatively, especially for users without terminals, MCI will deliver hard copy to recipients in 15 major metropolitan areas of the US, within four hours of receipt. This will cost \$25, compared to 20 cents a page for instant delivery,

and reflects the high labour input. Overnight delivery to 20,000 cities in the continental US will cost \$6. A fourth version, in which MCI prints off a letter in a facility near the destination post office and then inserts it in the conventional mail system (now being called "email mail" by many), will cost \$20.

MCI will use laser printers at its printing facilities, which will enable it to print pre-registered letterheads, logos and signatures. The service, called MCI Mail, comes at an interesting time for US business. A highly successful nationwide overnight package delivery service called Federal Express has made its founder one of America's richest men, and has attracted many competitors.

Moreover, Federal Express is generally believed to be taking steps to install its own nationwide network of facsimile machines, for even faster, less expensive document delivery. But there are far fewer users now than had been predicted.

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FAIRBAIRN... "There is a very important task to be done."

the initiative at the NCC, said the project was in line with proposals for links between industry and universities urged by the government's Alvey Programme on research into the next generation of computing.

Johnson said the survey would find out what software was available from universities and put up proposals on the marketing, distribution and documentation of the products to software firms and computer suppliers. "We do not

expect universities to sell to end users," he said.

The services industry has given the idea a cautious welcome. There are fears that academics with good ideas have no feel for the problem of marketing.

Managers urged to push

by Caroline Burgess

MANUFACTURING companies must invest in new technology to survive, senior management should push the introduction of computer and micro-based systems. And, the government should help them with a free advisory service.

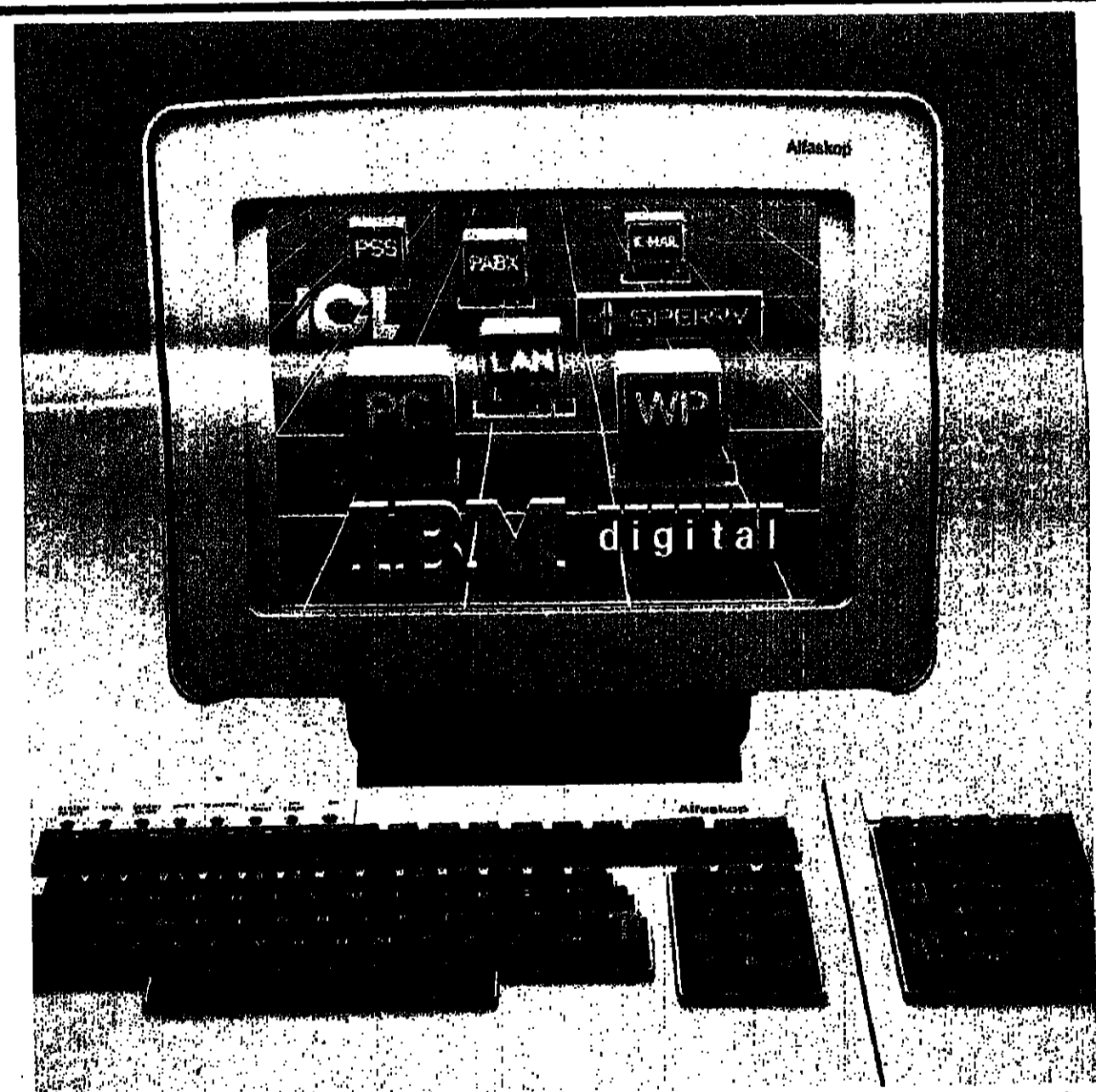
These are the main conclusions of a report by the Advisory Council for Applied Research and Development.

"It is the responsibility of industry to make their companies competitive," said Viscount Caldecote, chairman of the working group who produced the report. "But, the government should encourage them to invest in new technology."

The report calls for the Ministry of Defence to examine its procurement policies to give companies more incentive to adopt new manufacturing technology. And, it says the Department of Trade and Industry should set up an advanced manufacturing development service.

It also points out the shortage of manufacturing engineers with systems skills.

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THE INTELLIGENT CHOICE.

Enthusiasm helps BCS to make £42,500 profit

by John Kavanagh
VOLUNTARY work and enthusiasm from British Computer Society members enabled it to nearly break even on its silver jubilee activities last year and make a £42,545 profit overall.

This year the society is rewarding those members by increasing branch funds by 12% and specialist group backing by 50%. Subscriptions will go up 5%, two or three points less than the forecast inflation rate.

The society's annual report says a £30,000 loss had been expected on the twenty-fifth birthday events.

"But the enthusiasm and careful efforts of our committees, members and sponsors meant we almost broke even on this major activity," the report says.

The 1983-84 president, David

Firnberg, said: "Active members are the lifeblood of the society, so we're investing in our own future. It's our philosophy to encourage as much initiative and activity in the branches as possible."

He said the branches had been "enormously active" during jubilee year, organising extra events such as quizzes and links with schools.

The annual report says the society had a £31,000 windfall, mainly in the form of a delayed payment for past examinations held in Hong Kong.

In addition the number of examination candidates rose to 2,155.

As a result the overall profit was £42,545, compared with £140,245 last year. This year, with the increased funding of membership activities, the profit is expected to drop to £11,000.

New heavy expenditure last year included over £40,000 on software development for the new ICL ME29 computer and £21,255 on microfilming to the membership records.

Secretary Derek Harding said this had released a big room for other activities: membership details were now held in one filing cabinet.

He added that the computer system, running accounting, examination administration and membership applications, had been a success as it provided far more flexibility.

"We can do a lot more with our records," he said. "And on the examination side we would have needed considerably more staff to cope with the work without the computer." Another £11,000

was spent on applying for a royal charter. Half went on legal fees and half on calling an extraordinary general meeting and sending members the draft charter.

Harding said the September closing date for objections had passed with none received - but it could be at least six months or a year before the Privy Council decided on granting the charter.

During the year membership rose from 26,000 to 27,000. Members will have the chance to vote on the subscription increase at the annual general meeting on October 24. The new rates, which would come into force next May, would take the fellowship subscription to £43. Ordinary members would pay £32.50 and students £14.

Firnberg will take over as president from the Duke of Kent at the meeting.



FIRNBERG... "Active members are the lifeblood."

France to follow BBC's example

by Jack Gee

FRANCE's government run information technology agency is to follow the example of the BBC in launching a series of television programmes designed to encourage French viewers to give the computer an active role in their everyday lives.

But the state of the French microcomputer industry and of market demand is so poor that there is little chance of any manu-

facturer scoring success on the scale achieved by Acorn in Britain.

In the wake of the television campaign, the French government plans to set up 1,000 computer centres with backing from both the private and public sectors all over the country. These will be open to professional and hobby users. Each will have 500,000 francs (£40,000) worth of equipment installed.

The French government's latest

move to popularise computer technology may turn out to be a mere gimmick in the absence of a robust home microcomputer industry.

At best, it will open up a new market segment for IBM's PC, the Apples, and the Spectrum.

This would add a new burden to France's trade deficit in computers and peripherals which rose from 2.2 billion francs (£172 million) in 1981 to 5.8 billion francs (£465 million) last year.

GEC jostles leaders in BT hardware race

by Donald Kennett

GEC COMPUTERS is among the leaders in the race for the British Telecom tender for hardware to support the expansion of its Packet Switch Stream data network.

GEC is a surprise entrant to the tender competition because so far it has had a low profile in packet switching. It was, however, the only commercial company to join the academic and research community users in linking to the UK's Experimental Packet Switched Service (EPSS) in the late 1970s.

The EPSS network switches were supplied by Ferranti Computer Systems, which has since dropped out of the packet switching market.

Meanwhile GEC has been installing private packet switching exchanges at university and research council sites and working with the academics on implementing the embryonic standards for Open Systems Interconnection (OSI).

The academic community has been at the forefront of users agitating for the establishment of interim UK open systems standards, so it can buy computer equipment from a variety of sources and still exchange files and share databases among its members.

GEC has been keen to sell systems to the academic community; as a result it is a leading implementer of the UK interim stan-

dard communications protocols.

The "Rainbow Book" or "Coloured Book" protocols developed by working groups of the PSS User Forum in the last five years were endorsed in the Alvey Report on Fifth Generation systems as tools which would help the UK to get ahead of its competitors in information technology.

They have since been sponsored by the Department of Trade and Industry (DoTI) and promoted by its Focus committee on IT standards and its Information Technology Standards Unit.

On the performance side, the 32-bit processor units introduced earlier this year in GEC's 4000 series are capable of handling a throughput of up to 800 packets per second.

This compares with the 200 packets per second capacity of the current switches made by GTE Telenet in the US and adapted to UK requirements by Plessey. At the other extreme, the French company SESA claims that its new generation DPS 28 switch can handle 2,000 packets per second, although it is not field proven at this rate of throughput.

GEC Computers deputy general sales manager Tony Matthews argues that 2,000 packets per second is an unnecessarily large capacity, making for a network configuration that will be too vul-

nerable to the failure of a single switch.

The capacity of his own company's switch is about right, he thinks.

"Throughput is one thing," said, "but whether it is proven or unproven is another. Viewdata provided a lot of good examples of unsubstantiated claims. We had 900 users on one computer. No one else has shown us though they may have claimed."

Another strength of the company's switch is that it can be standard applications in the use processor without affecting the throughput capacity, since that is handled by up to eight autonomous input-output processors at the same bus.

This feature - together with the Rainbow Book protocols, which are due to be implemented by the end of the year - should make it particularly easy to support or run value-added services on any of the switches in a network.

This answers BT's two main requirements - for a large capacity switch and for a system that can readily support value-added services.

The company has already been exercising its interfacing capabilities, and developing its understanding of PSS, by supporting eight of its 32-bit units to BT.



MATTHEWS... Argues that 2,000 packets a second is too much.

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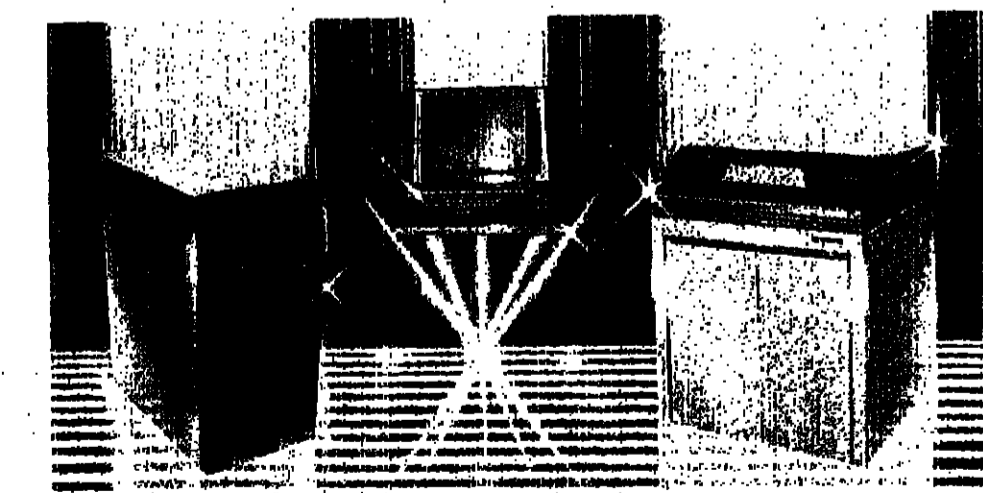
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Memory to profit from share issue



software '84

EXHIBITION AND CONFERENCE

SOFTWARE FILE



COBB... "It is now IBM versus everything else."

Lisa lures software houses in IBM battle

by Claire Gooding

APPLE is turning to software houses in its drive to sell the innovative Lisa against IBM's PC. A programme of price cuts, software releases and development aids was revealed last week at a London conference held by Apple to lure software developers into the Lisa fold.

Lisa is technically streets ahead of the IBM PC, but Apple has bowed to commercial pressure and put MS-DOS, the Microsoft operating system used by IBM under the name PC-DOS, on to the Lisa. Unix and Microsoft's Xenix are also on the way.

"The micro business now is IBM versus everything else," said Peter Cobb, Apple UK managing director. "That means some confusion about the way Lisa is viewed: it isn't just a terminal; it's an elegant personal computer."

"Buyers have a wish list which says all micros will have to communicate with all mainframes, but it will come down to what they are prepared to pay for. What users really need we will cater for, and we are catering for the small business area."

Mainframe database specialist Cullinet has just announced in the US that it has broken its agreement to develop Lisa software with Apple. The larger software organisations seem to be concentrating on the ready market provided by IBM's less accomplished PC. Apple's efforts in the UK are aimed at the network of small software houses whose applications put the other Apple machines on the map, but Apple is also keen to attract the larger software houses like CAP, Logica, Software Sciences and Scicon.

There are already 25 UK soft-

ware houses producing Lisa software, including Systematics, Intelligence and Reuters.

Although most who see Lisa are bowled over by its glamour, there are signs that Apple may have gone a step too far ahead of the rest of the market. Between 200 and 300 machines have been sold in the UK since Lisa's launch in August, but software houses appear to be treading water to see if Visiory's Vision environment for the PC will do a job similar to Lisa's custom-built windows, graphics and multiprocessing facilities.

Apple is doing its best to make sure Lisa sheds its standalone image. It announced its Workshop package of development tools in the US last week, and will be making the development tools available free to software houses which buy any of its language compilers.

Pascal, priced at £480, is seen as the most promising development tool, but Basic, C and 68000 Assembler are also offered with a number of utilities.

The Workshop offers a set of link routines, a mouse which is a subset of the Lisa application, and a file manager system: all the utilities which developers need to make a use software can be edited, and linked within the Workshop shell, and further tools are way to help with debugging testing, in Apple's £750 Tool.

The price cut brings Lisa to £6,500 complete with a 16-bit Lisa small business product manager Tom McE makes it highly competitive price/performance basis. The duct has effectively come to market.

Database 'nursing' service

by Claire Gooding

SOFTWARE consultancy Micro Solutions is extending its hand-holding service to database users. The consultancy, set up earlier this year to nurse first-time users through the traumas of being computerised, has opened a division to deal specifically with database packages, starting with Comsoft's Delta and Ashton Tate's dBase II.

"The most difficult part with a database like Delta is developing

the applications," said managing director Mark Bury. "We are not producing software in the traditional role of a software house because we do not start from scratch; we build on something that exists."

Although software and systems houses are falling over themselves to make their parameterised packages "easy to implement", most first-time users still blanch at the idea of setting up a system for themselves. What is simple to the

programmer is still a stumbling block for the naive.

The company has been offering its hand-holding service with such success that Bury is setting up franchised branches in other parts of London. The service includes independent advice on the best software, even procuring the hardware if necessary, then nursing the users through such processes as making back-ups and doing month-end runs.



HURY: "... We do not start from scratch."

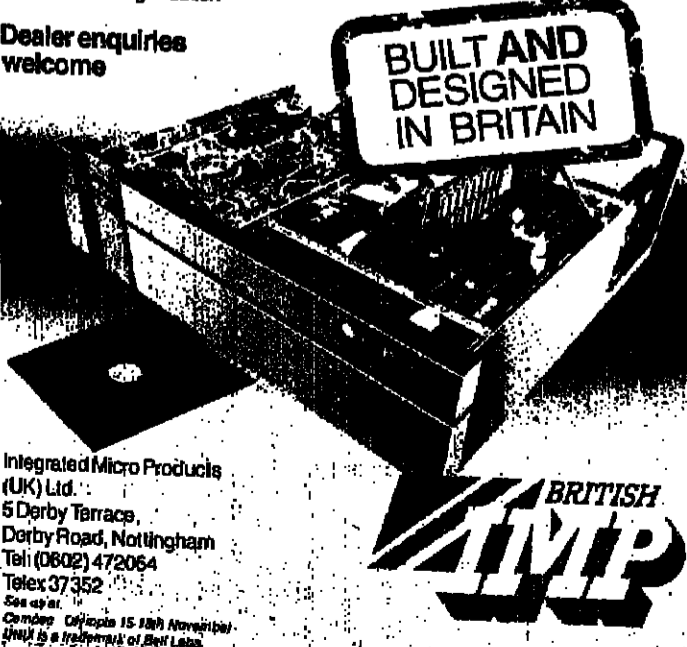
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Informatics sharpens its AIMS

MAINFRAME software supplier Informatics is spreading its net with new options to its AIMS service. The annual improvement maintenance and support service is Informatics' stratagem for bringing its users into line with IBM's information centre scheme.

The information centre is IBM's brainwave for coping with the DP revolution brought about by the Personal Computer. Instead of going to outside suppliers for microsoftware and other solutions to their problems, users go to the company's information centre, where they are shown the approved options and can choose their software.

The information centre is like an in-house solutions shop, where many types of software are available to a variety of users. Informatics is accordingly sharpening up its mainframe offerings, particularly the Mark V, its online programming facility, to make its online facilities available to Mark IV, Answer/2 and Answer/DB Users. As well as other Mark V add-ons aimed at making the product more user-friendly, Informatics is providing an interface to the SAS Institute's graphics system.

Easing the load for HP users

TWO software productivity tools have arrived to ease the development load for Hewlett-Packard 3000 users. Reactor and Designer come from IIP specialist Info Centre and are companions to the Genasys development language.

Reactor is a transaction processor and report generator, and Designer an automated systems design tool which handles screen design, automatic database design, program creation and customisation. It can work in several languages including French, German, Spanish and Japanese.

Both products have had success in the US, but according to marketing manager Alan O'Shaughnessy, Info Centre has its work cut out convincing DP managers in the UK that such tools are worth adopting.

"In the US there's an enthusiastic reaction," said O'Shaughnessy. "Multinationals in particular are pleased to take such products, but in the UK DP managers are less prepared to take a risk on new ground. They prefer to stick to things they know, like Cobol, rather than try the fourth generation languages."

Sphinx wins £250,000 Peachtree contract

MARKETING firm Sphinx has won an exclusive contract from Peachtree to implement and supply the entire range of Peachtree's accounting packages under the Unix operating system. The deal covers £250,000 worth of software to be sold by Sphinx in the first year of the agreement.

Sphinx is working on the source code of the Peachtree applications to port them to several different Unix machines. The Peachtree Business Management System has a high profile in the MS-DOS market as it was adopted by IBM, and its reputation there is likely to drum up considerable interest in the Unix marketplace.

Sphinx showed the system Computer Trade Forum machines, including the E-Pixel, Onyx and Plan. Mentions for AIX and the Tower are also on the way. The entire set of applications for £1,000, although the ledger and order processing modules will also be available individually.

Peachtree picked Sphinx to cause it views Unix as a growth market. The company also has the same premises as Peachtree: Maidenhead.

Firms back piracy fight

by John Kavanagh

UK COMPUTER industry heavyweights have united to fight software piracy through the joint development of hardware locks. IBM and ICL were among 15 companies at a meeting run by the government's British Technology Group and the National Physical Laboratory, at the end of last month to discuss action. The companies will each put up £5,000 to back research into devices such as encryption products and locks.

Six firms set up a common study protection method. It will report before the end of the year so that the National Physical Laboratory can start development of a standard device. But the Computing Services Association, representing one of the UK services industry, is not at the meeting. "We wish them well - but are not in the research business," said director-general Dr. Eyskens.

Apple sues six Taiwan companies

LAWYERS at Apple Computer are on the warpath again, this time against Taiwanese companies alleged to be copying Apple software. Apple has brought a suit in Taiwan against six companies.

All have denied copying the programs in question. Apple's autostart ROM and Applesoft Basic.

Apple's company line is to track down and prosecute any infringement of the Apple name and system.

Canadian laws
CANADA is moving towards firmer laws for software copyright. The federal Cabinet is inviting proposals for changes to the law this autumn, although legislation is still several years away. According to Bruce Couchman, a policy analyst for the Department of Consumer and Corporate Affairs, any changes in the law cannot take effect before 1986.

Publisher and software giant make a deal

THE need for training and testing in the microcomputer industry has brought together two of the giants in publishing and software.

Pergamon Infotech has signed an agreement with systems supplier Digital Research for the two companies to co-operate in software development for business users.

Venues for the course will be Northern and Southern England.

50% discount

PRICES for graphics add-on DEC and Prime network systems taken a tumble.

ISSCO, supplier of the desktop and Tell-a-Graph program, has adjusted its pricing to reflect what networked subsidiaries like PrimeNet or Decnet can buy products at 50% discount. Maintenance fees are also reduced.

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Concurrent CP/M is upwards compatible with CP/M-86, providing access to a large library of applications. Micropro's Wordstar, Ashton Tate's dBase II, Chang Laboratories' Microplan and Graphplan, Sorcim's Supercalc, Comshare's Target Financial Modelling and Digital Research's DR Graph are random examples from a long and growing list of applications running under Concurrent CP/M.

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MICRO NEWS

French firm looks for UK outlets

by Caroline Burgess
SMT-GOUPIL, who claims to be the top French micro-maker, is looking for UK distributors for its Goupil 3 range in preparation for the product's UK launch in early 1984.

It plans to open an office in London to organise a network of about 20 distributors and 200 dealers. But no agreements have been reached yet.

"We have to enter the market now otherwise it will be too late," said Patrice Roucayrol, Goupil's export manager. "The number of manufacturers will decrease, but it is still a 100% growth area."

"We aim to sell on special applications. At the moment we are doing a market study to identify the best areas and decide on the best way to introduce the machine. It is the software that will sell it."

Goupil 3 offers 64K, 128K or 256K (expandable to one Mbyte) with a choice of 6809, Z80 or 8088 processors. Operating systems include CP/M, MS/DOS and Unix and both five inch and eight inch



ROUCAYROL... Doesn't want to be too late.

disc drives are available.

"The main advantage is that it is an open expandable system," said Roucayrol. "It is very versatile, as

you can change the processor and therefore the operating software."

According to Roucayrol, SMT-Goupil holds about 13% of the

micro market in France, second only to Apple. It claims to sell between 500 and 600 machines a month.

Missing software mars DEC sales

by John Kavanagh

IBM has left Digital Equipment Corporation standing in business microcomputer stakes — even though DEC has the better hardware. Dealers selling both ranges say a lack of software on the DEC products in the early days has restricted their sales to no more than a dozen machines in the last year. The DEC successes are mainly dealers specialising solely in the DEC range.

"I doubt whether we've sold 12," said Zygal Dynamics chairman Con Driscoll. "Meanwhile the IBM personal computer is a big winner. There were a lot of unofficial IBM pc importers before the machine was launched here, so when it was announced, there was a lot of UK software available. DEC launched its range just before IBM but it was short on software."

"When a customer comes into our City shop it's only natural for a salesman to plug the product most likely to win the order."

Peter Bailey, marketing manager at Planning Consultancy, agreed. "DEC must recognise that a lot of effort is needed to get dealers behind a product. They are starting to realise it."

"The sales force naturally takes the easy route to selling — and the easy product to sell is the IBM PC. But technically DEC's products are best."

"We're gearing up now to push DEC products; we have the feeling it's worked out just where it wants to go with the dealers."

Bailey said his company had sold about a dozen DEC machines. Other firms had similar sales. Gerry Butler at The Computer Terminal reported sales of under 12, mainly because of the early software problems. DEC had "a great machine" he said, and sales could pick up in the next few months as DEC did more promotion.

Xerox, with 17 UK computer shops, had sold no more than 15 or

so machines during the last year. But firms dedicated to the range were enthusiastic. Jo Wickes, head of Beauchamp Computer Systems, said his company was selling 18 or 20 a month.

"People talk about software problems but there are 500 packages for the Rainbow in the UK and we've got 40 or 50," he said. "Even in the early days we were selling machines with just a package."

"We were committed to it from day one; others were late because they could see a gap start was possible. But the IBM specification is nowhere near that of the DEC products."

Wickes said there was no conflict with DEC use of software even when Beauchamp was going for orders of 40 systems a month from big firms. "DEC gave us its way to help us," he said.

Glen Hurley at Demotech gestured his company was still with DEC products because they concentrated only on that range aimed at a specific market: training and marketing.

DEC's UK personal computer manager, Laurie Cattell, said his company was shipping 20 personal computers a month in the UK and the number was rising. "We've always acknowledged there were software problems but products are coming through quickly now," he said.

Cattell said DEC was doing its best to boost dealer sales. It had revamped its dealer training and started a promotion campaign in television and radio and in the press.

DEC has launched a new version of the Rainbow microcomputer in the US with the MS-DOS operating system which also runs on the IBM personal computer. The new Rainbow Plus includes a 10-megabyte hard disk unit and is priced at \$3,475. DEC has no immediate plans for a launch.

The facts on Fibre-optics.

Crystal Clear Communications

With fibre-optic cabling, data transmission is free from any kind of interference, which enables operations to proceed in electronically noisy environments.

None of the noise or electro-magnetic interference with ordinary copper cable lines—so there's no worry about cross talk.

Security of Data

Fibre-optics provide high security of data during transmission, making them particularly suitable for applications in banks and finance houses where security of data is vital.

The signal quality is also far superior than that previously available with copper cabling.

Easy to Install

With fibre-optic cabling systems can be installed in confined spaces far more easily than conventional cables.

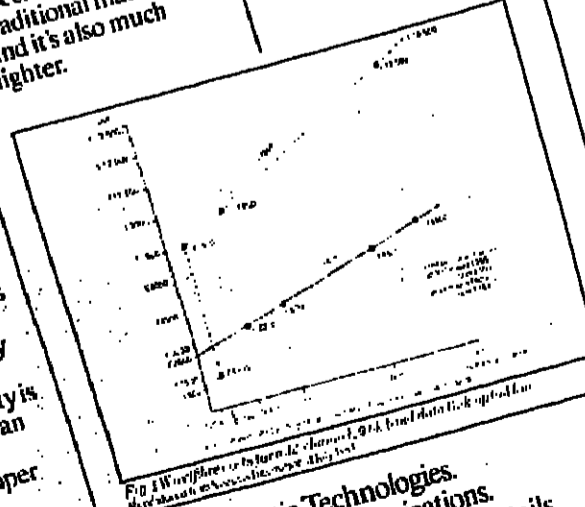
Particularly useful when installations are required in underground ducts where space is very limited. It has the advantage of greatly reducing the volume and number of necessary materials and it's also much lighter.

Versatile Data Transmission

You'll be able to take advantage of the wide bandwidth, high speed and overall efficiency of transmission with fibre-optics.

Cost Effective

And most important of all, fibre-optic cabling is much more cost effective in short or long runs than copper cable.



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Transtec offers free software

by Caroline Burgess
PUBLICLY backed micro manufacturer Transtec is offering £1,500 worth of software free rather than cut the price of its eight-bit Kryton range, which retails at between £1,695 and £3,795.

Formed 18 months ago, Transtec launched its Kryton range in June 1983 and has since announced its own local area network, Transnet.

Noel May, Transtec's managing director, said he believed the way to succeed in the micro market was by good marketing.

In addition to the software included in the price of the machines — a trend started by IBM and Osborne — Transtec is offering Telemaintenance — a diagnostic and repair service via telephone lines.

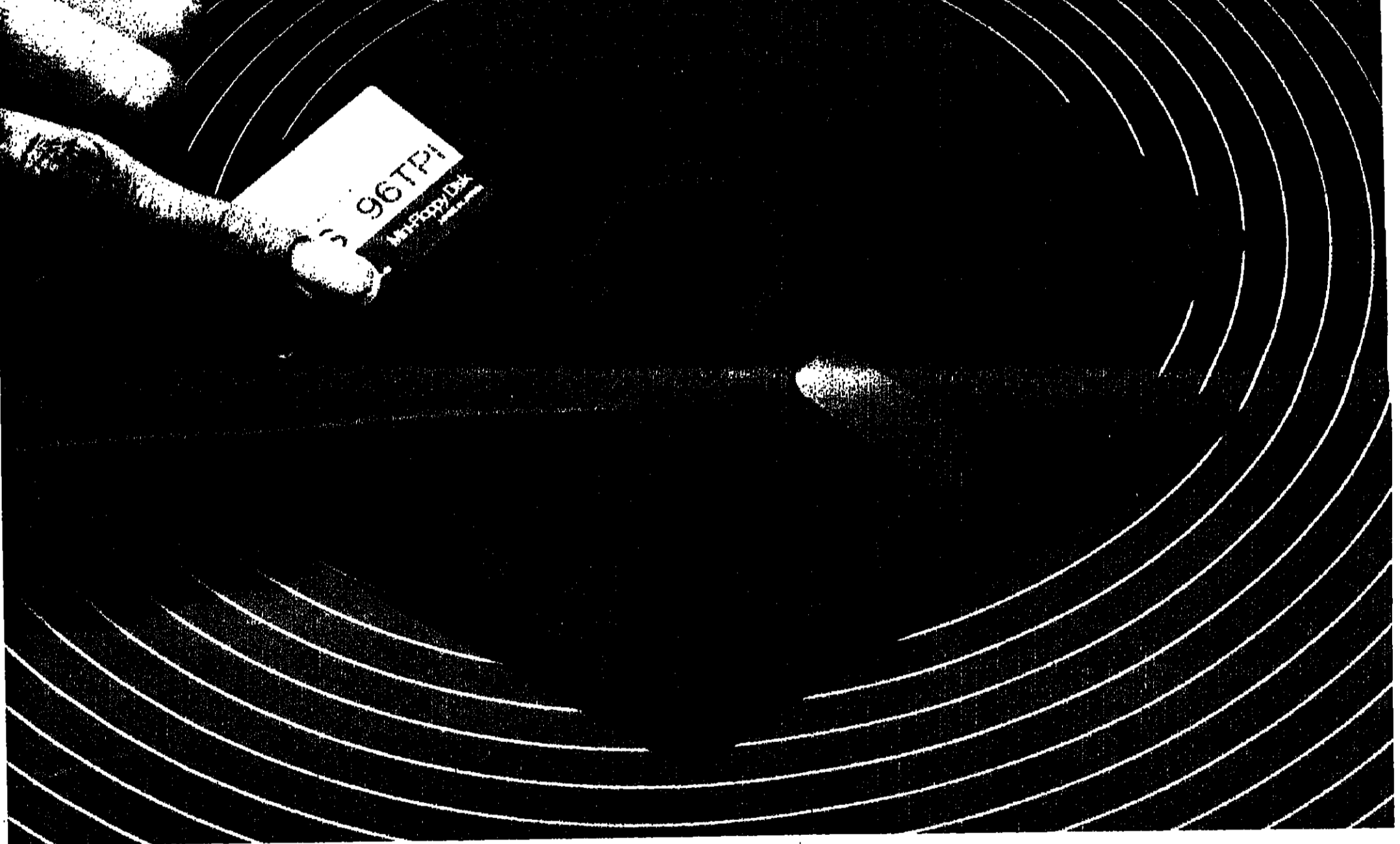
The company is also offering to pay its dealers up to 5% of turnover with Transtec for adver-



MAY... Believes in marketing. Dealers have to sell 2 machines a year to get a full rebate. "We are aiming to get dealers working together to maximize the impact of promotional activities," said May. "The amount we spend on advertising will depend on sales, but it should be at least £200,000."

A sales office has recently been opened in London. Design and manufacture of machines is done in Dublin. Transtec's base is in Dublin. The Kryton range is based on an eight-bit Z80 processor with 64K memory expandable to one Mbyte and runs CP/M and UCSD P-11.

UNTIL NOW, ALL FLOPPY DISKS HAD ONE THING MISSING:

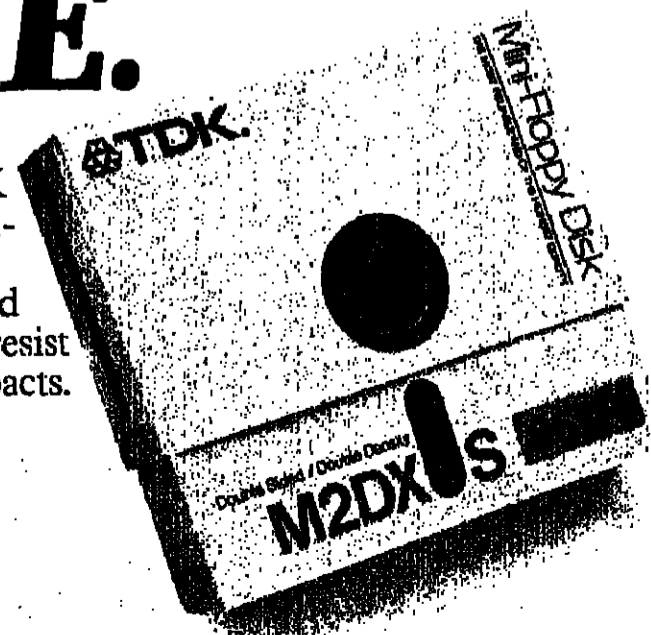


OUR NAME.

Good as most floppy disks are, they can never be as good as the new TDK range. TDK floppy disks benefit from more than thirty years of experience manufacturing magnetic recording tapes.

There are nine disks in the range, and each has a surface that's smooth and stable; a base that's very durable and very, very accurate; a liner that's engineered to resist changes in temperature and humidity, and a jacket that resists heat, as well as impacts.

If you want a very reliable way to record and store vital information, drop our name. TDK.



TDK Tape Distributor (UK) Ltd., Pembroke House, Wellesley Road, Croydon, CRO 9XW. Telephone: 01-680 0023

PROFILE

Shiraz aims to plug a professional micro gap

LACK of professional selling has left a gap in the UK micro market, according to Shiraz Virji, who has just opened what he claims is the world's largest computer shop.

"We are now trying a new method - a new concept. We offer a total solution, because that is what has been missing. The gap in the market is the style of selling."

"We believe in making the customer feel happy, and that means firstly selling the appropriate software. Too much hardware has been sold without due thought to programming requirements and training the operators", he added.

by Caroline Burgess

Until now Virji's career has been in the marketing of food, textiles and other consumer goods, as part of a string of family businesses located in India, Africa and the UK. His success has raised enough to enable him to invest over £2 million in the set-up of his computer shop, called Steiger.

"Computers are just like any other product. We see the retail market for computer equipment as having the potential to expand at

possibly a faster rate of growth than any other sector of business enterprise.

"The growth area is microcomputers for small businesses. And the current price war is to our advantage as it opens up the market to more people, especially as we have price protection guarantees from all our manufacturers."

Steiger will offer customers advice on software and hardware, as well as free pre-sale training, after-sale assistance and maintenance.

Virji believes this will alleviate businessmen's fear of taking chances and increase the potential market.

"We will have no hard selling salesman," he said. "But we will give customers the chance to talk to experts and see the equipment all on one site. We are only recruiting experienced staff as consultants."

Virji's first shop, based at Stonebridge Park, North London, was opened on September 13, and the aim is to establish a chain of stores throughout the UK. He has rejected establishing franchises because he wants the shops to share facilities.



VIRJI... "We are trying a new concept."

Sites for the other stores will be based on the response to a £200,000 advertising campaign, due to start in November; but 20 sites are already under consideration.

He estimates a turnover of over £5 million in the first year by selling about 1,600 machines at the rate of five or six a day. And he expects investment over the next two years will be over £5 million.

Steiger also offer a "disaster-recovery-service" based on its Vax 11/780. This service was launched at the same time as the shop and offers emergency cover for an annual subscription of £10,000 to £50,000.

Virji sees this as a door opener into the software business. He hopes customer contact through the service will give Steiger credi-

bility when it moves into software development for minicomputers, Virji's other main aim.

He is already talking with major software houses in an effort to convince them to let him develop software 30-40% cheaper by doing the work in India.

Virji decided just two years ago to enter the computer industry. He spent a year researching the promising areas and formulating his aims. The Stonebridge Park site was bought as a rundown building in June 1982.

Investment in the scheme nearly all comes from Virji; but some has come from private investors. The computer shop covers 21,000 sq ft and contains a showroom, warehouse and training rooms for pre- and post-sales support.

DOWNTIME

Now who's upsetting the Apple cart?

COMPUTER companies are wont to display a smidgeon of petulant frenzy should they discover someone with the temerity to use a name similar to their own.

Things get nasty enough when the similarity involves a product, but should the corporate title be involved - well gosh!

Apple's corporate lawyer claims to deal with dozens of cases of copyright infringement each week and wrote recently to Apple Inc Computerized Antique Marketing Service, a Californian antique company and told its boss, Michael Augustine, to stop using the word "Apple" - or else.

Augustine wrote back to Apple in an effort to get to the core of the problem, pointing out that he had been trading under the name in both the US and the UK for quite a few years longer than Apple has been in business.

Apple Inc had to pay license fees to the map tops before it started to sell its big gear over here.

Apple Inc had to pay license fees to the map tops before it started to sell its big gear over here.

Personal problem

ONE of the major selling points of the ICL personal computer is the army of ICL engineers poised to move into action should your Rair (sorry, ICL) micro cease to function. Well, it ought to have been a selling point, but as ICL's only offloaded three of the little devils (micros, not engineers), I guess it

wasn't quite enough.

Now ICL has two profs. Lots of dusty PCs, and lots of dusty customer engineers, busting to get out there.

The answer is obvious, says Augustine: your engineers, now mend a few of people's micros to keep them out of mischief.

Chinese get-away

HEWLETT-PACKARD has made a habit of flying its directors abroad to annual board meetings. The reason is that it gives them a good chance to "commiserate the group's overseas subsidiaries."

But can this be the reason for this year's extravaganza in Peking? The cost of the trip has not been released, but given that the party will consist of 44, including directors' wives (and one husband) and that there will also be a visit to the Great Wall of China, I doubt that the cost will be much less than £100,000.

The group's Chinese activities are, as yet, minute.

The real reason for the trip is, of course, that the group is making a major assault on a potentially huge market now that the US has relaxed restrictions on high technology sales to China.



Steve Shirley

contacts within the oil industry, it is hoped that bonus payments will bring his earnings up to the level attained prior to his accident.

Based in Scotland, he communicates with and on occasion commutes to - his colleagues in the South of England.

The main objective with the Work Units project is to give potential employers positive evidence that some disabled workers can be highly effective, given the right tools. The scheme has been successfully extended to a further 50 Work Units.

Predictable vacancies are for computer programmers, the first being for an experienced Cobol programmer to work with a computer package vendor. Up to now, those who have benefitted have been "well qualified" or "professional" people. This is a result of the still inherent complexity of operating much information technology equipment and micro systems in their entirety.

The oldest of the initial recruits, a double amputee with an unusual blood disorder, is probably also the highest paid. Having worked as a material standards engineer he had been out of work for over a year. His job is a highly skilled one and typical perhaps of the new information specialists "stores manager" using his technical knowhow and

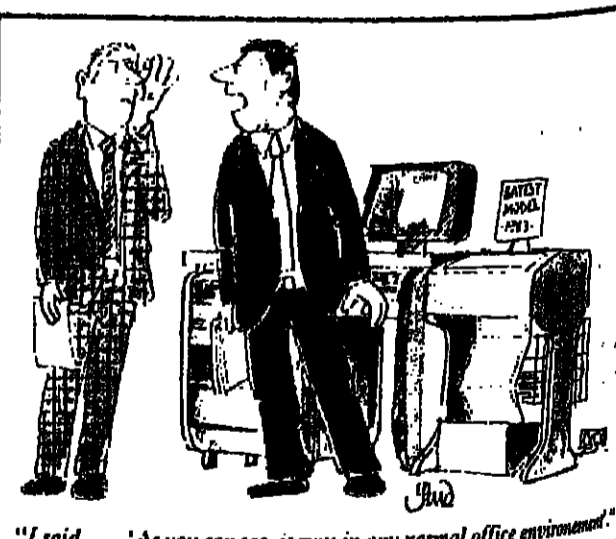
detachment of work from other home life. His previous computing experience meant that he had no difficulty in adjusting to his Work Unit, and he is using his abilities to the full.

Beverley Ashton, a graduate in Third World Studies from the University of East Anglia is now working from her home in Suffolk for the British Computer Society in London W1. She had previously experienced great difficulty in finding employment, her disability being one producing extreme physical weakness to the extent that to lift a conventional file of 50 pages is sheer hard labour.

Her work for the BCS combines her administrative flair with newfound computer skills, using a British word processing micro from LSI to organise examinations for systems analysts.

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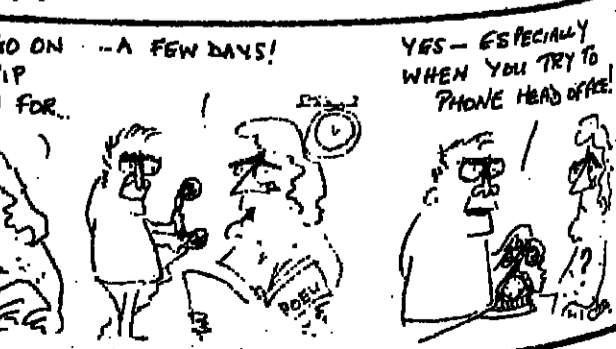
detachment of work from other home life. His previous computing experience meant that he had no difficulty in adjusting to his Work Unit, and he is using his abilities to the full.



"I said... As you can see, it runs in any normal office environment."

10 YEARS AGO

FROM COMPUTER WEEKLY OF OCTOBER 11, 1973: French peripherals manufacturer Sintra headed the industrial and financial group to buy the French subsidiary of Computer Machinery Co. CMC France... Calcomp brought a \$100 million anti-trust suit against IBM... A user group was established for IBM Spanset equipment.



FUNNY HOW YOU LOSE TOUCH WITH THE NEWS... WHEN YOU GO ON A BUSINESS TRIP ABROAD - EVEN FOR A FEW DAYS! YES - ESPECIALLY WHEN YOU TRY TO PHONE HEAD OFFICE.

ComputerWeekly

Quadrant House, The Quadrant, Sutton, Surrey SM2 5AS

Thursday, October 13, 1983

Who dares bet against IBM?

THE best products are not always the best sellers. The truth of that statement is the *raison d'être* for salesmen. Another trite bit of truth is that IBM has the best sales operation in the industry.

Customer acceptance of IBM equipment is extraordinarily high. The astonishing volume of shipments of the IBM Personal Computer makes that abundantly clear. As one business microcomputer dealer said this week in explaining sales out of his own micro shops: "The sales force naturally takes the easy route to selling - and the easy product to sell is the IBM PC."

He also said that when customers come into his shops, it is natural for a salesman to plug the product most likely to win the order. Again, he was thinking of IBM.

When IBM entered the personal computer market it went straight for third party sales. If it had maintained its traditional policy of only selling direct, it is unlikely that it would so quickly have reached such a dominant position.

Many computer companies have been caught flat on their feet by IBM's nimble new posture: to many it must seem that the whale has become a piranha. These same companies must be looking with some trepidation at the prospect of IBM becoming a true OEM supplier across the entire range of its machines.

Most systems houses now have very little incentive to push IBM equipment, since there is usually no profit to make on the sale of IBM hardware.

It is a different matter when they propose a system based upon DEC or Hewlett-Packard or Data General kit, for example. Then they are sure to have picked up good discounts on the equipment.

The rumours that IBM would use third parties to sell its entire range have been about for several years. IBM has been having exploratory talks with a number of major software and systems companies, and it is not a question of if, but when.

The stumbling block for IBM is now to sell through third parties and still maintain the kind of control over its marketplace which it has enjoyed in the past. One potential danger is that sales by third parties might bring about more mixing and matching of different equipment. But the day of the "true blue" data processing department is probably already a thing of the past.

The betting is that IBM will make an announcement on third party sales sometime next year. Software and systems companies are pressing IBM to become an OEM supplier in the hopes that it will be a big boost to their own businesses.

Data Logic's Mike Brinsford believes that OEM agreements with IBM would not distort business: "Competition is healthy for everyone."

There were some microcomputer manufacturers who greeted IBM's entry into the personal computer market with the same kind of statement. It would be surprising if many would put their hands on the hearts and say the comment is still true for their own businesses.

For the user of computer systems the end result could be less choice, but also less confusion. It has certainly been in the microcomputer marketplace that the first real move towards standard operating systems and software has taken place.

That, however, was happening even before IBM made its personal computer announcement. IBM merely increased the tempo of the process.

There are many in the industry who are saddened by IBM's success with its personal computer, particularly since it is not a "state of the art" machine. There is also the general belief that the long expected "shakeout" of the industry has started.

There is something of a shakeout going on; but it is worth thinking back 10 years or so to what the predictions were then: only IBM and one or two other computer companies would survive into the eighties.

IBM's entry into the OEM market will bring about enormous changes. Whether those changes will be good for the user is an open question.

1984 and all that...

THIS week's example of the strange things people say about computers was sent in by J. C. Smeethers, of Manchester, who wins £5.

A giant computer got a court rap on Thursday. The electronic brain was criticised for delays in dealing with motor cars cases.

LETTERS

Machines devour their own staff

I AM writing back to you in the hope that you will find the time to read my letter. I am a computer and software industry.

Nowadays more and more people are teaching computers, even up to "A" level standard. More and more colleges run programming courses, there are university courses, and also schemes funded by the BBC. I have seen quite young children deep into obscure books in the library.

Surely, with all this interest and with so many people obviously

wanting to get into the industry, employment prospects in the four main fields are...

The law of supply and demand says that there can only be so many jobs and only so many people needed to fill them. The machine makers are beginning to do their own thing.

I have heard of programs to write programs and I saw a computer recently which had an operating system that reduced the human operators to almost labourers.

men, teachers and others. Naturally if there is a large pool of available labour to draw on, it is not a foregone conclusion that wages will rise. I think I have seen particularly brilliant boys you encourage your son in an attempt to become a programmer or would you rather see him to work as a sales man, or as a clerk like being an undertaker for instance?

PETER RAMSDEN Bradford.

A casual approach to security by staff can lead to insecurity of firms

WHILE I endorse much of what John Mallindine says in the article Spies are Keeping an Eye on Your Printout (*Computer Weekly*, September 8), about the security hazards of confidential material, I feel that what he has failed to realise is the casual approach of employees in general to this problem.

My company offers advice to many major organisations on destruction of all types of material and we have found that in many cases, if you put the responsibility of separating and destroying confidential printout on office staff, this generally does not work.

It is necessary to treat all paper work as confidential and to destroy all material and I agree that the waste paper basket does form the most vulnerable part of the security.

Having said that, the question of cost is involved and how much is a company prepared to invest in shredding machines and labour? Shredding machines are costly, particularly large-scale models

which cost anything from £5,000 to £20,000, take up valuable space and are extremely expensive regarding labour to operate.

Relying on small shredders in various parts of the building is also extremely costly and dangerous from the security aspect, unless all material is shredded.

What I would like to see with Mallindine is his reference to the company security destruction agents brought in from outside and the attendant horror stories of confidential material "blowing in the wind".

There are several companies, my own one of them, that do undertake this work for organisations both large and small.

They deal with the collection and destruction of all material under the most stringent security conditions.

Any such stories are most certainly not of the work of these companies, but are usually that of the waste paper merchants offering a destruction service.

Of course, there are some "cow-

boys" but it is up to the individual organisations to ensure that proper enquiries are made as to the integrity of the companies to be used.

One certainty is that the costs in using a shredding service is infinitely cheaper than using any in-house shredding system and as regards Mallindine's information about the recovery value of silver from micro-film, one of our clients recently undertook this work and the cost in doing so was £275, of which he received £51 in return.

In my opinion it is not always the best method to entrust the security arrangements of document destruction to the company security officers.

An independent organisation can usually pin-point weaknesses in security and itself can be frequently monitored as to its destruction procedures.

C. H. OSBORNE Managing director

Data Disposal London.

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Newcastle answers

WITH reference to your report Newcastle's Fallacy, the answer is: *Computer Weekly*, September 22.

1. The Newcastle University is totally independent of the nature of the underpinning industry.

2. I have known of Rokeby 110 systems have not reported any problems with the software when it is reported to their vendors.

3. The Newcastle Connection permits the transparent networking of heterogeneous systems.

4. Any improvement to a system can only benefit the Newcastle Connection.

D.W. SHARP Technical Support Consultant Products Division Advanced Microelectronics Newcastle-upon-Tyne.

Re-writing history

I WAS interested to read *Computer Weekly*, September 22, a letter from John McNeil in which he claimed he was one of the founders of Logica. He said that there was no reason for Philip Hughes to claim that Logica was started by only three people, and thus erase from the record the two founders including himself who are no longer with the company.

I have sympathy with the author who interviews the survivors at the head of a now successful company, who is manipulated by those in power into unwittingly convincing in rewriting history. I would be interested in reading editorial comment on how this could be avoided. After all, the founders who have been pushed out in a palace civil war are not available to refute the statement, and the journalist has no way to know of their existence, either in the past or in the present.

In another geo-whiz computer company in which I worked, after some of the six founders were driven out, journalists were trapped by the surviving clique into publishing inaccuracies about the founders who had been ousted. Note that only the victorious clique pays advertising revenue.

What good did your publishing of John McNeil's letter do to *Computer Weekly's* income?

By the way, I was not one of the ousted founders in the other case, but only an observer.

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BT revives the prospect of meetings by TV

PROSPECT of cutting business travel costs by linking groups of people up by television has been revived, following a new UK development.

British Telecom has announced a teleconferencing service, based on narrow band digital transmission, rather than the more expensive alternatives of broadband digital, or the analogue transmission used for sending conventional TV pictures.

The new service will cost about £2,000 to hire an hour's link-up with the US, compared with £3,100 for BT's existing service based on analogue transmission via satellite.

The service is also available for teleconferences within Europe at about £500 an hour, but link-up with other sites in the UK will not be possible until next year. At present BT offers its Confravision service in the UK, which will link up two local studios for about £120 an

hour, or £240 if the distance is over 200 kilometres.

Teleconferencing will never replace eyeball to eyeball confrontations for the thrashing out of financial deals, but the hope was that it would save on travelling to international conferences, as well as for development meetings within multinational companies.

So far this aim has not been achieved, partly because of the cost of broadband transmission of television pictures at the usual rate of 140 Mbits a second.

In Europe TV pictures are transmitted at 625 lines in a frame, and 50 frames a second, which after a little arithmetic gives you 140 Mbits as the transmission rate required. This, however, assumes that you transmit 50 completely different frames in a second.

Only part of a television picture changes with each frame, and at a conference in particular there may be little action at all, just move-

ment of the lips, and flapping of hands to effect emphasis.

BT's new service is based on a compression technique that would prove useless for transmission of, say, an Olympic sprint final, but usually works fine for conference pictures. The technique was developed by the company, GEC Jerrold, a joint venture set up by GEC in the UK, and the New York-based company General Instruments, which formerly had a UK subsidiary called Jerrold.

With the new technique, TV pictures are transmitted not at 140 Mbits/sec, but just two Mbits per second.

"If you wave your hands quickly you notice a slight lag," admits Jerrold marketing manager Richard Couchman.

But the system worked satisfactorily during its first public trial at the sixth International Digital Satellite Conference last month, when the conference centre in



There's new promise for videoconferencing.

Phoenix, Arizona, was linked up with the Hilton Hotel in London.

Later this month, Jerrold's picture processors will be used for the first transatlantic digital video conference, using a permanent link established by BT and the US telecommunications giant, AT&T.

The bandwidth compression of the TV picture is achieved by a code (digital coding and decoding equipment), which is the equivalent of the modern familiar to users of remote terminals. Only three companies in the world have so far developed codes that achieve bandwidth compression: Jerrold itself, NEC and the US company, Compression Laboratories, which recently began marketing a code and studio equipment from California.

The US and Europe are often at odds over the development of technical standards, and teleconferencing is no exception. But in this case the Europeans have the advantage

that their code will deal both with European digital transmission services, such as Megastream at two Mbits/sec, as well as the US service at 1.5 Mbits/sec.

But the biggest advantage of the European standard, to which Jerrold's code conforms, is that it has been accepted as the world standard by the international telecommunications body CCITT. This means that third world countries, expected to become big teleconferencing users, will opt for equipment based on the European standard, rather than the US one.

US companies will not shed too many tears, however, because their domestic market looks set to outstrip the rest of the world combined. Americans spent an estimated \$70 billion on business travel last year, and about 10% of this is expected to be diverted into teleconferencing.

The link-up with General Instruments will give GEC access to the huge US market for teleconferencing and Jerrold has already received orders for codes for AT&T. But Couchman says the Americans are making teleconferencing too expensive by basing it on purpose-built studios costing \$1 million.

All you really need, says Couchman triumphantly, is a well-lit room with a main socket. In this, Jerrold offers a rather complete console complete with microphones and TV camera. It costs about £30,000. And the price of code at about £65,000 and so have a complete studio.

But this is a year or two off yet. At first codes are likely to be installed in BT telephone exchanges with conference rooming linked up to the exchange's conventional broadband. It eventually big firms, at least, probably buy their own codes direct link-up to narrow band transmission networks.

Executives' living standards pick up

IF YOU wear a white collar and carry a briefcase, the chance is your salary will have beaten inflation during the last two years. And the loftier your position, the bigger the improvement in standard of living, according to a survey of 614 companies by Inbucon Management Consultants.

Data processing heads, for example, earned an average £15,912 for the year ending July 1983, 8% up on the previous year. The retail price index only rose by 4.2% in the same period, so there is an improvement of about 4% in the real standard of living.

Systems manager and senior systems analysts were not quite as well favoured, but still improved their standard of living, with salaries respectively of £13,984 and £11,317.

But the survey points out that the real improvement is even bigger than the figures suggest, because of favourable changes in tax and national insurance, as well as better fringe benefits.

Of 6,321 executives included in the survey, exactly two thirds had

five or more weeks' annual holiday, compared with 55% last year.

The higher up the executive ladder you go, the bigger the increases in prerequisites and basic salary. Cost accountants were up 9% at £12,045, while managing directors were up 10% at £31,177.

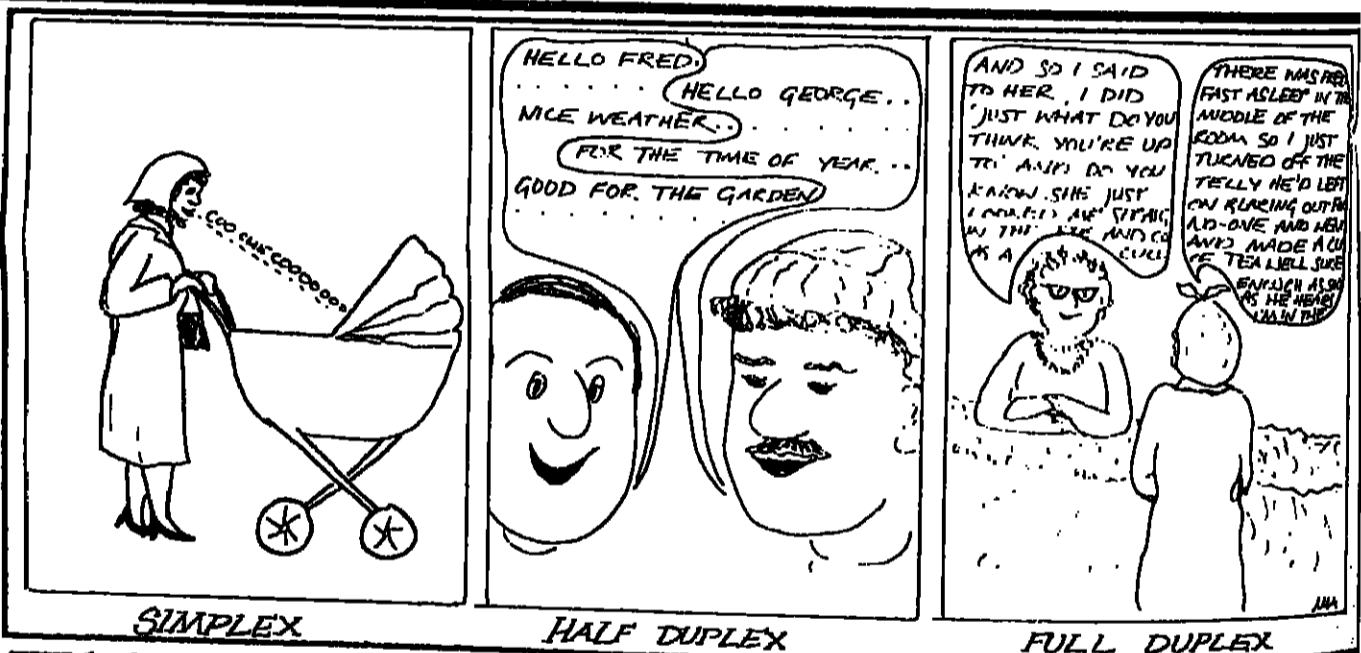
One managing director, well known and loved by us in the computer business, did especially well last year. ICL managing director Robb Wilnot doubled his salary to about £150,000. His workforce cannot complain too bitterly, as they heat inflation with an average 9% rise, but it does rather look as if directors are lining their pockets while preaching restraint to their workers.

The average for directors as a group was 10% up, at £22,141 and 99% of them had company cars to boot. Managing directors apart, the best paid executives are still company secretaries, earning an average £20,337.

The 22nd Inbucon Annual Survey of Executive Salaries and Fringe Benefits in the UK is published at £110 a copy by Inbucon Management Consultants, Salary Research Unit, 192 Knightsbridge, London SW7 1RN.

Workplace is compiled by Philip Hunter

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36-37



Thinking about the network outside

FRED Jennings of software and systems house Data Logic recently prepared a series of reports on networks for the company's software people.

Jensheets are designed to help people unable to form intelligent questions, because they don't know what questions to ask. They are designed to stimulate questions, rather than to provide ready

answers.

Computer Weekly feels that they deserve a wider audience and will be printing them in Workplace over the next few months.

Jensheets are menu-driven, with the first raising the major questions and subsequent ones explaining on each question area. Below is the first Jensheet.

Introduction to communications networks

A communications network provides the means of connecting together a number of geographically separated computer systems and terminals. In the design of a communications network the following questions should be considered:

What type of network is required? In general terms a network consists of one or more of the following types: a private network based on the use of British Telecom leased telephone lines, either point-to-point or multi-point; a network which used the Public Switched Telephone Network (PSTN); a network which uses the British Telecom Packet Switched Service (PSS); an in-house network, or a local area net.

What type and speed of modems are required? Asynchronous modems - 300 bits per second to 2,400 bps; synchronous modems - 1,200 bps, 2,400 bps - 9,600 bps single port or multipoint, 14,400 bps, 16,000 bps/13,333 bps, 19,200 bps requires two leased lines, 48,000 bps

(required a wide-band circuit); and base-band (inhouse) modems - 300 bps-19,200 bps, asynchronous or synchronous.

Is the PSTN to be used for any of the following operations: Standby operation: a single PSTN connection (single dial-up) or two PSTN connections (double dial-up) can be used to provide an alternative temporary line for a modem link when the main line fails.

Auto-call operation: where the computer is used to dial PSTN telephone numbers.

Auto-answer operation: a system in which a computer, intelligent terminal or modem equipment automatically answers a dialled call to establish a data communications connection through the PSTN.

What are the communications protocols and line codes used? What type of communication interfaces are required for the computer and/or terminal systems connected to the network?

Are time-division multiplexers to be used? There are three main types: synchronous fixed frame multiplexers; statistical synchronous multiplexers; and statistical asynchronous multiplexers.

Multiplexers are used to reduce line and modem costs and to provide error free operation over noisy telephone lines for teletype compatible terminal equipment, which has no retransmission on line error capability, for which the last

variety is most useful.

Is a network management system required?

What are the patching and standby arrangements required to cover line and/or modem failures?

Has the network been designed to minimise line costs and the cost of associated equipment (ie modems)?

Will the network provide the type of service and response time required by the user?

Has the network been designed to take advantage of future telecommunications services and facilities (ie PSS)?

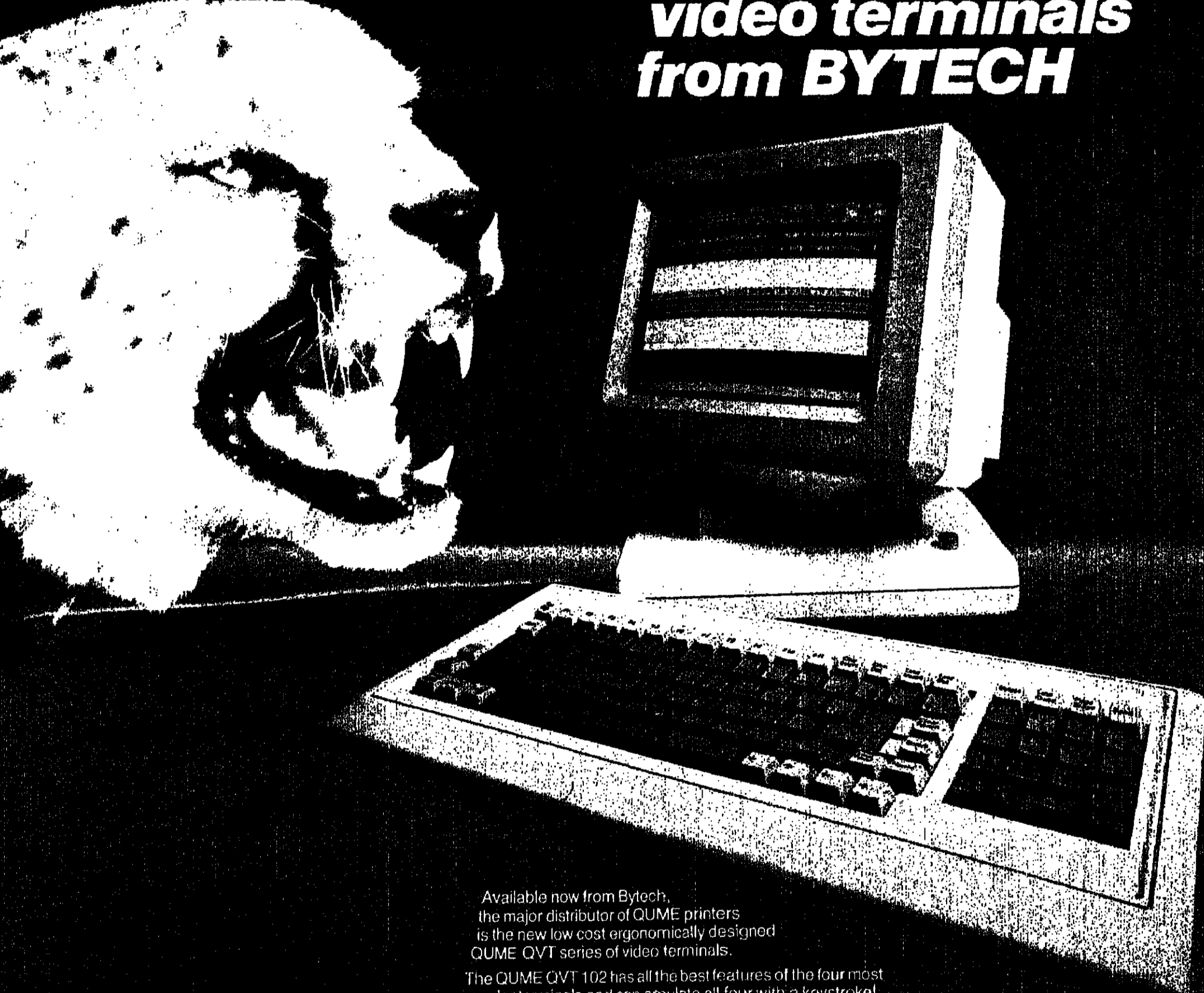
PUZZLER

TOWARDS the end of 1980 I published two separate alphabets involving the total 26. The first was: SIX + SEVEN + SEVEN = TWENTY, and SEVEN + THREE + TWO + TWO = TWENTY. Imagine my surprise, therefore, when a reader recently sent me another one with the same total. Here it is:

ONE
ONE
ONE
THREE
THREE
ELEVEN
TWENTY

See page 75 for solution.

Leader of the pack... the new Qume QVT range of video terminals from BYTECH



Available now from Bytech, the major distributor of QUME printers is the new low cost ergonomically designed QUME QVT series of video terminals.

The QUME QVT 102 has all the best features of the four most popular terminals and can emulate all four with a keystroke! QVT 103 is code compatible with DEC VT 100/131 and offers 80 or 132 character/line, split screen and up to four pages of memory. And QVT 108 faces up to the most demanding jobs with 22 function keys, 13 editing functions and 2 pages of memory.

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The users who love their 'nice' parent

And the company, DEC, is a pleasure to do business with says the Decus User Group. John Kavanagh reports

IT says something for a computer manufacturer when it can kill the development of a long-awaited upgrade processor for one of its main product lines — and the users calmly accept the decision.

But Digital Equipment customers seem to regard their supplier as a "nice" company to do business with. As Arrick Wilkinson, chairman of the Decus user association in the UK, puts it: "I've never been sold a computer by DEC. I've always gone to them to buy one."

Not that DEC gets everything its own way — Decus sees to that. It has 6,500 members in the UK, 15,500 in Europe and 75,000 worldwide. And it is growing at 20% a year.

Decus' strength lies not only in numbers, but also in the speed at which the entire worldwide organisation can be mobilised when necessary. At the end of May DEC told users it was killing the DECsystem-10 and 20 mainframe upgrade processor project. Within six weeks Decus had sent a 14-page questionnaire to DECsystem-10 and 20 users, gathered the re-

anyway. There's no problem when you're a prospective customer — but once you become a paid-up user you lose that clout.

The almost ambivalent attitude towards DEC is further reflected in the user association's financial relationship with its supplier. The company pays half Decus' costs — but Wilkinson insists Decus is completely independent.

"DEC doesn't control us in any way at all," he says. "Our 50% grant is negotiated every year, but there is never any pressure from DEC to do certain things in the year."

"If ever it became necessary we could become totally financially independent. We could charge more for membership and services. The members would support that because we are extremely active; there were 200 people at a recent Vax users' meeting and if we'd charged slightly more we could have covered all the costs."

"I'm not sure if we would want to cut all our ties anyway. Being in partnership with DEC has advantages. There's a DEC representative on our council and they keep us privy to their secrets."

DEC has gone through something of a culture shock in recent years, with country managers given more autonomy and the move into business applications bringing new computer distribution and software packages schemes.

Decus has changed in line with DEC's re-organisation. The UK chapter has taken on the 1,000 members in the Middle East because that market is now dealt with from DEC's UK headquarters.

There is a good spread of commercial, industrial and university people on the Decus council. Wilkinson himself is computer manager at Glasgow University's natural philosophy department (physics) and runs a Vax-11/780.

DEC's new autonomy has benefited users, Wilkinson says. There is far more flexibility in regional offices and problems now get solved locally.

All the same, Wilkinson constantly comes back to DEC's "niceness".

"DEC is a very old-fashioned company to deal with," he says. "For example, in the UK they've had the same three people on the DECsystem-10 operating system development team for many years. They look after good people; they don't promote them to their level of incompetence."

"Perhaps it also makes them a bit naive. They're learning, they have to change the way they do business. They can't just sit and wait for people to come to them on a recommendation any more."

Naive seems a strange description for the world's number two computer company. But Wilkinson often uses this tag when talking about DEC.

"It took a lot of courage for DEC to tell a user meeting that the DECsystem-10 and 20 project had been cancelled — especially when those users had all gone expecting to hear about the launch of the product," he says. "The company hadn't even got its act together on what it was going to offer DECsystem users instead."

"It says a lot for DEC's relationship with its users that it could stand up and break the news that way. Either that or it was being naive."

And he adds: "DEC has increased the performance of the DECsystem-10 processor by three times since 1976 without shouting about it."

"Some people would call that naive. I call it honesty."

WILKINSON... Believes strongly benefits users and suppliers.

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'Users are our number one priority' says HP boss

Nuala Moran went to the Hewlett-Packard 3000 international user group conference in Edinburgh to see just how the company intend to look after customers. She found a new approach. Software houses will now be brought in to provide packaged software, and personal computers will be given more sales drive. HP will concentrate its efforts on two areas: products below \$10,000, and products from \$10,000 to \$300,000.

THE attendance for the Hewlett-Packard 3000 international user group conference in Edinburgh last week was impressive in two respects: there were over 600 users in attendance, and over 100 HP people. This reflected the importance with which users and manufacturer regard the forum.

A recent change of policy at HP aims to take it from being technology-driven to being market-driven. Speaking at the conference, Ed McCracken, manager of HP's business development group said: "We intend to make the user group a major part of our dealing with customers."

He added that listening to customers and spending time in the customer environment "is one thing that contributes more than anything to a company's success."

As if to emphasise that he meant what he said about customer relations, McCracken apologised for delivery delays in Europe. "This was due to a major mistake in forecasting in March and April this year. We are now scrambling to buy parts and get delivery back down to 90 days," he said.

McCracken went on to talk about the two major trends in HP's marketing strategy. In future the company will be looking to software houses to provide packaged software.

"In five years' time there will be six computers to every programmer, so software applications will be essential," said McCracken.

He now believes we can no longer be the only software supplier for our products. We will be making software easier to design and ensuring it is possible to buy it off-the-shelf.

The second trend is the move to personal computers. McCracken told the user group that in future the 3000 would be a PC controller, and that by 1990 there would be a workstation on every desk.

To meet the demand for personal computers HP will be concentrating its efforts on two families of computer products. These will be computers up to \$10,000 and computers from \$10,000 to \$300,000. McCracken said that HP would never design a basic computer that cost more than \$300,000. And he added that computers costing less than \$10,000 would soon take about 84% of the market.

In order to address this market HP will be concentrating its resources. "In the first place we will offer lasting value. Doing business in this industry is like getting married, and this is one of the reasons we are so closely involved with the user group," said McCracken.

HP will also be making computers smaller and easier to use. "We will bring the computer out of the basement."

HP announced a new personal computer, the HP 150, a few weeks ago, which is supposed to be the leading edge of this new marketing strategy. It has the industry standard operating system, MS-DOS, and third parties will be offering software.

McCracken said that HP would be introducing a new personal computer every three to six months and making them all compatible.

The influence of the 3000 user group is likely to grow, not only because HP is changing its orienta-

tion to become a customer-driven company, but also because there will be more 3000s around. To date about 12,000 have been sold, although some of these are just upgrades.

Bill Crow, manager of the international user group, estimated that there were 9,000 active systems, with each HP member having an average of 1.6 systems. HP forecasts that by the end of 1984 it will have sold 20,000 3000s, making it the fifth most installed computer in the world.

The IUG has 5,000 members.

By 1990 there will be a workstation on every desk... products under \$10,000 will take about 84% of the market

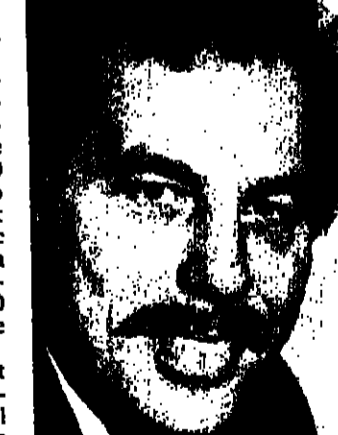
worldwide, representing about 80% of the installed base of 3000s. Membership is growing fast, with over 120-130 new members per month, and the membership renewal rate is over 90%.

There has been some friction between 3000 users and HP recently over updates to MPE, the 3000 operating system. The users were given an assurance that in future updates would not be held up by hardware releases, and that enhancements relating to hardware, such as printers, would be optional.

After addressing the user meeting, McCracken spoke to Computer Weekly on various aspects of HP's policy in the commercial market. HP is a relative newcomer to this area.

Before 1975 it concentrated on scientific and technical computers and was in any case better known for its instrumentation. The 3000 was originally designed as a general purpose machine, but it helped HP get a "foothold" in the commercial market. "This went from nothing in 1975 to \$1 billion last year," said McCracken.

He went on to say that the company's commitment to PCs in no



MCCracken... "The government wants to help people who carry out high technology development."

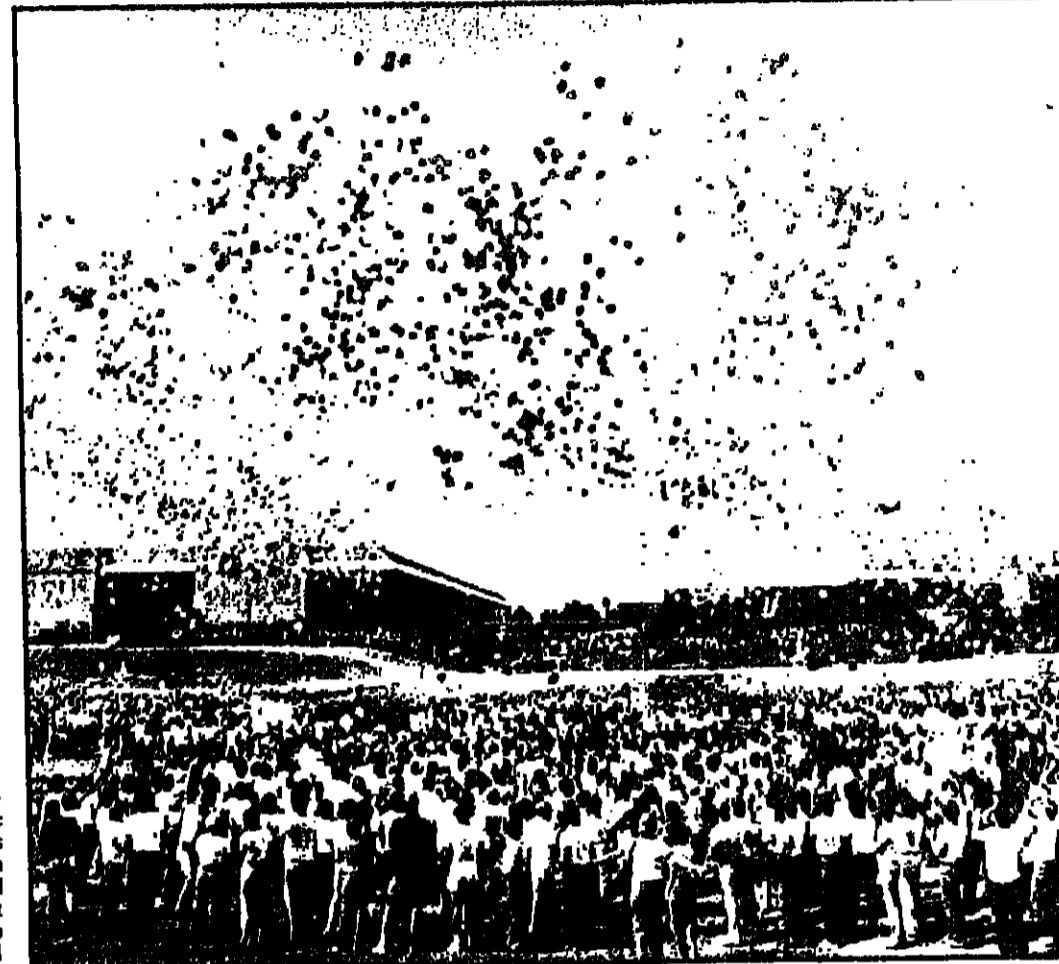
way reflected a change of policy away from minis. "The lower and lower cost of machines makes it obvious to invest in the PC," he said. "But there will still be a need for 3000 class machines and there will be an increase in the number of 3000 users. Even so, you won't need a 3000 to use a PC properly."

McCracken also promised that full compatibility would be maintained with MPE, the 3000 operating system, even when the 32-bit machine was released in the next 12 months. A new release of MPE is due then, and it is problems with getting this to run on the new machine that have delayed the release of this fifth version.

It is planned to integrate Unix

and MPE. HP has already introduced Unix onto its technical computers, and McCracken said the company was looking at using it on PCs, even though it required more memory than other operating systems.

HP has set up a large dealer network to sell the 150. Although it was announced in Europe several weeks ago, it will not be available until early next year. It will then be possible to go straight down to a dealer and buy one off-the-shelf — something quite revolutionary for an HP product.



Up, up and away... over 1,700 HP staff were on hand to celebrate the sale of 10,000 3000 products recently. Ten thousand balloons were released into the air.

being maintained, although they have been moved around and separated differently, so that they form vertical rather than horizontal groupings.

McCracken said: "There is a need for formal market feedback, which means that the groups have to interface. This means that there has to be some formal structure."

But he added that in spite of all the established HP traditions being slightly in shreds, the HP philosophies weren't going to change. For example, he said,

"There are several HP developments in the UK at the moment. A new factory is being built in Bristol to make mass storage products for the European market. The first phase of the building will be completed in August 1984."

Doug Carnahan, who is responsible for the project, said that by this time there should be 200 employees. Investment in this project is between £10-£15 million.

Carnahan was also involved in talks with Bristol and Bath Universities about interchanges between HP and the universities if plans go ahead to build a central research facility in Bristol. Carnahan said the lab would be the first of several in Europe.

Moving this facility means that the rate of growth of research in the US will slow down. John Golding, HP's research director, and David Baldwin, the UK managing director, had a meeting recently with Kenneth Baker, the technology minister to discuss the project. Commenting on the reasons for this Carnahan said: "I think there is a strong feeling in the UK about the need to develop high technology in industry. The government obviously wants to help people who do that kind of work."

Carnahan added: "It is a big step in terms of philosophy to move research from Palo Alto in the US. I think it is a positive statement about the availability of technical talent in the UK."

HP is also expanding its office products, which only recently became a separate division, in the UK. Staff levels have gone from about 100 in 18 months to two years and HP is looking for a 60-70% growth in its office systems sales.

"We don't borrow money, which sometimes restricts our growth, and we won't be abandoning our honesty and integrity."

As for his position as head of business development, a position created in February this year, McCracken said he had three primary objectives. "I introduced eight or nine new 3000 models in my old job. Now I am managing the whole of computer sales. This will give me an opportunity to increase the level and visibility of HP in the market place."

"I shall also be getting HP into applications software and office automation. HP will become one of the major vendors of office automation."



MCCracken... "Listening to customers contributes more than anything to a company's success."

"We don't borrow money, which sometimes restricts our growth, and we won't be abandoning our honesty and integrity."

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TERMINALS

Two tiny clouds mar the outlook

Terminals have evolved dramatically in 20 years - and may do so again over the next five years

THE first breakthrough in the attempt to bring computing power to the people was the development of computer terminals. Clumsy, inelegant and slow, the first keyboard printers would now be scorned by most schoolchildren.

But in the early 1960s they brought a flavour of adventure and a sense of being in touch with the leading edge of technology to those finance departments of large corporations which could afford them.

For terminals were dear, both to buy and to run. They took up a large proportion of the resources of the very expensive mainframes of the day as the software to run them was both large and rudimentary. Visual display terminals cost even more money and took up even more CPU resources.

So the use of terminals was at first restricted to the productive departments, including programmers, and the most crucial controlling departments - the accountants and the managing director.

Now it almost seems that anyone in a company which has a mini or a mainframe who wants a terminal can have one. In the UK alone almost 170,000 terminals were shipped in 1982 and the figure for this year is expected to be between 15 and 20% higher. According to leading computer industry forecasts

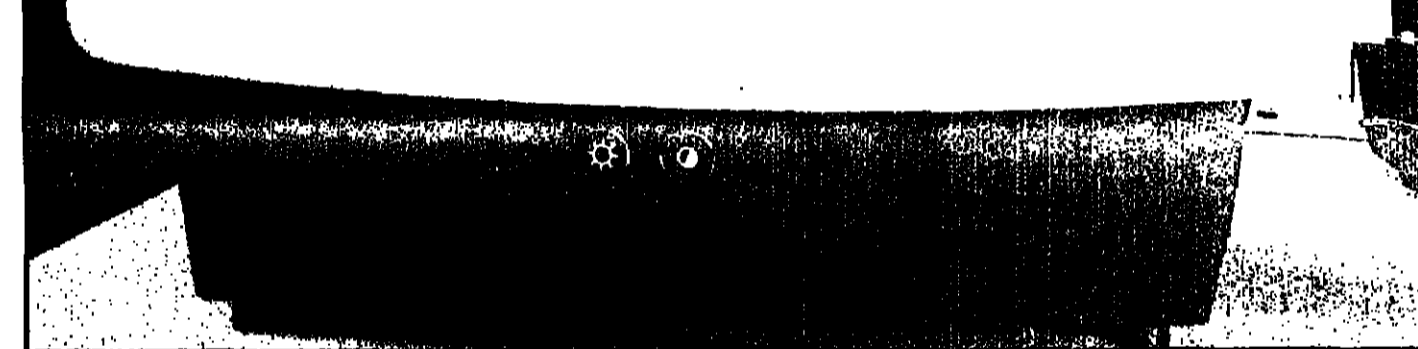
terminal International Data Corporation (IDC) about 400,000 terminals will be shipped in the UK in 1988. And these will be almost all visual display terminals of varying sophistication and cost. The VDU in the office is no longer the sign of influence and power in a wealthy organisation but merely the indication of a busy person.

The development of terminals took a path typical in the computer industry. They were first used by programmers in research departments, then by the military - the only organisations beside computer companies which could afford the resources to run them - and then taken up by multinational companies (banks) before finding their way into general circulation.

On the way the complex software and hardware needed to run online and real time applications was developed, refined and made less expensive.

But much of the increase in the use of terminals was dependent upon improved technology and equipment outside the traditional computer industry. Particularly in Europe, the national telephone networks of the 1960s were barely adequate for data transmission, at slow rates, let alone the speeds necessary to support an interactive terminal.

And the UK's telecommunications suppliers, who were then



VDUs keep on evolving - from "dumb", to "intelligent" - to what?

enjoying a boom supplying very old technology to the emergent nations of the Third World, were not devoting a great deal of effort into supplying the more sophisticated equipment needed to make teleprocessing economical.

It was the entry of the Japanese into the worldwide television market that really boosted the use of terminals. The intense competition of the consumer market led to vast improvements in the technology of manufacture of cathode ray tubes and high volume meant that prices dropped dramatically.

At the same time the world's airlines and airport authorities got to grips with the implications of the fact that a jumbo jet could carry up to 500 people.

They financed the first major commercial online networks to handle reservations and airline information. These networks used a large number of "dumb" terminals, simple display units controlled directly by the mainframe.

When these systems were completed in the early 1970s, DP managers all over the world woke up to the fact that they could now buy a VDU for under \$1,000.

Once this barrier, which was as much psychological as financial, was breached the terminal market began to take off.

For a DP manager could now get a batch of terminals, combine them with one of the relatively cheap minicomputers that the engineers were using on the shop floor and put up a project to the finance committee that cost only a fraction of what a mainframe or mainframe upgrade would cost.

At this point the computer industry received another bonus from the consumer market. The boom in calculators and digital watches meant high volume and therefore cheap production of micros.

Terminal manufacturers could now give their VDUs "intelligence" at a fairly low cost. A microprocessor attached to a VDU could take over much of the housekeeping tasks: controlling screen formats etc, that had previously to be controlled by the central CPU.

This could now go on with its main tasks of processing the data and controlling the network. Response times were improved so that many more end users were prepared to sit down and use the computer.

The demand for terminals soon outstripped the capacity of the

mainframe and mini manufacturers to supply it and third party suppliers had a bonanza. By the end of the 1970s delays for deliveries of DEC's standard terminal, the VT100, were such that it was rumoured that some people were buying the company's smaller minis just to get their hands on the terminals that came with it.

Now the market has stabilised with demand and manufacturing capacity relatively evenly matched. But it is still a dynamic market. Users are being much more discriminating and demanding. The non-computer professionals who are increasingly using computers in their daily work will not tolerate the poor response times or rudimentary graphics that DP people of the mid-seventies took as a matter of course. They also want something that is attractive to use.

Improvements in colour screens and more powerful microprocessors have meant that the manufacturers can satisfy these demands. But they have also had to pay much more attention to the ergonomics of the use of terminals.

The terminal must now be attractive, for no one wants a clumsy piece of machinery with wires falling out of it on their desk.

It must also be comfortable to use. A great deal of research has gone into attempts to cut down

eyestrain for instance. Currently the biggest increase in demand within the terminal market is for graphics terminals.

This demand has been fuelled by two separate types of users. Financial and marketing people are taking advantage of the adage that a picture is worth a thousand words and using the more sophisticated terminals to present their financial information.

And the wide range of colours and increased power now available on graphics terminals now means that much more design work can be carried out on computers.

And as telecommunications, including local area networks, improve the use of these types of terminals will be extended to a much wider range of end users.

But there are two small clouds on their horizon. The first is the increased use of microcomputers by the very people that they are hoping to sell their terminals to.

These professionals already wish to use their personal computers to access the corporate database and computing power.

At the moment there is only one supplier of the software to control this, US based MSA. But most of the other independent database software suppliers have plans to bring out similar software tools and the mainframe manufacturers will not be far behind.

The second cloud is that the Japanese are about to enter the international market in a big way. At the moment they are of only marginal importance in the American and Western European market.

But with their capacity to make a success of high volume mass markets they will be a threat. It will be interesting to see which names will be on the 400,000 terminals sold in the UK in 1988.



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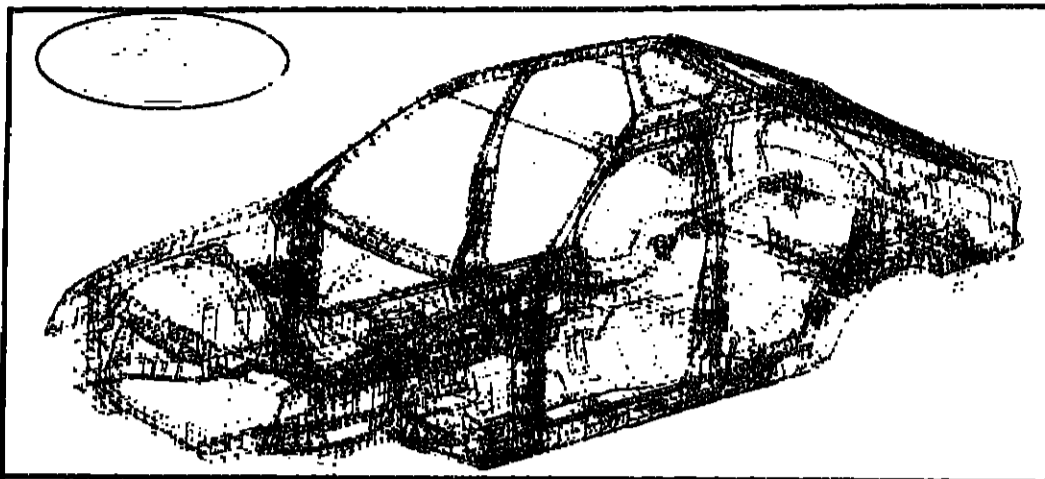
Design it in graphical detail

Graphics terminals are constantly growing in intelligence and convenience. Robert Fenner looks at where they stand

ALL kinds of terminals are now undergoing a state of change as a direct result of the evolution of new sizes and configurations of CPU.

Mainframes and superminis are increasingly downline-loading their more laborious tasks; system peripherals are becoming more intelligent in consequence. Terminals are no longer just terminals. With local computing power the intelligent VDU has become a standalone device if its user wants it to be. It can, in other words, behave like a microcomputer. It can talk to other microcomputers, and can store programs locally. And the graphics designer can store designs locally, which is good news for him if he wants fast access to them.

Graphics terminals, then, in terms of intelligence, are no different from the rest of the terminal market. If anything, they are more intelligent — you need several planes of memory to keep those multi-coloured screen pixels buzzing. And local storage of designs



Structure of a model of the Ford Sierra is analysed by using computer graphics.

is a great help; you don't have to wait in a great queue to retrieve it from the mainframe.

But think again. The majority of CAD/CAM projects are vastly complex: a number of people work on them, and they have a number of stages, a number of different

designs. Without a central store, how is the user going to find what he or she needs? What the designer has saved in mainframe access times is to some extent lost in what has become a very complex system. I am designing a new car engine, and I know the gearbox

backwards — but where is the clutch design? I don't have it. Who does?

CAD/CAM projects, in other words, do need some form of central control. Intelligent graphics terminals commonly do not have autonomous authority in their

work: the design is downloaded to them and their intelligence is employed in holding it in local memory while the user develops it in real time.

The central CPU is freed from holding all the graphics commands — draw, fill, plot, zoom and so on — and the end-user in the large design project knows where to find his or her own, as well as other, design drawings. An alternative, of course, would be a CAD/CAM micro network.

The market for graphics terminals is huge, and figures supporting this claim are nowadays almost as numerous as opinion polls around election time. International Data Corporation quotes a total of 27,440 units shipped in Western Europe in 1982; of these 80% were colour or monochrome raster graphics screens. Colour raster terminals are predicted between 1982 and 1988 to have an average annual growth rate of 48%, by far the largest rate of any technology type. This is largely because of the falling price of RAM memory — a number of memory planes are needed to drive the colour screen — and the price of the whole unit is dropping as a result.

Within this one technological bracket a broad range of products is available. Screen resolutions start at around 256 x 256 pixels. These terminals are not normally used in design work; they are more suited to applications such as business graphics, process control monitoring and technical data analysis where the smoothness of a screen-drawn circle, for instance, is not as important as the data represented.

For this reason, the same terminals often have a limited colour palette of, say, 16 or 64 shades. In these areas colour is used simply to distinguish between one type of data and another. Flow diagrams on a process control monitor display pressure levels in one colour and temperature in another; much more than this would be excessive.

Many applications for this kind of product have recently taken off in Europe, and major manufacturers are aware of the potential. Hewlett-Packard predicts a worldwide annual growth rate for business graphics of 50% to 60%, with Europe somewhat nearer the higher figure; and Tektronix, normally a manufacturer of mid-range to top-end screens, moved into the volume low-cost market this summer with two terminals, the 4105 and the 4107, at around £3,000 to £5,000.

What low-cost terminals such as the 4100 family have in common with more expensive machines is the local control of drawing commands. True zoom, panning, 2D image transforms and windowing — splitting the screen into segments for different parts of a design — are all held in firmware at local level.

In the more expensive terminals these are combined with high resolution multi-colour screens. Typical figures here would be

around 1024 x 1024 pixels, colour palette of anything up to million shades of which 1:4096 would be displayable, one time.

It is on these devices that complex CAD/CAM applications are performed.

There are, however, some hardware problems here. The standard for 3D terminals was rejected last year because it did not take this level of local intelligence into account. Open-such as perspective and line removal under Core was formed on the host before the sign was down-line loaded.

And so now, after all the movement over the graphics gear standards Core, and GKS, at old Gino, comes a whole graphics software project for IBM standards, though many are working on Plugs, a 3D application program to perform data transformations, do a hierarchical structure in the graphics generation.

Japan is poised to challenge dominance of the terminal is

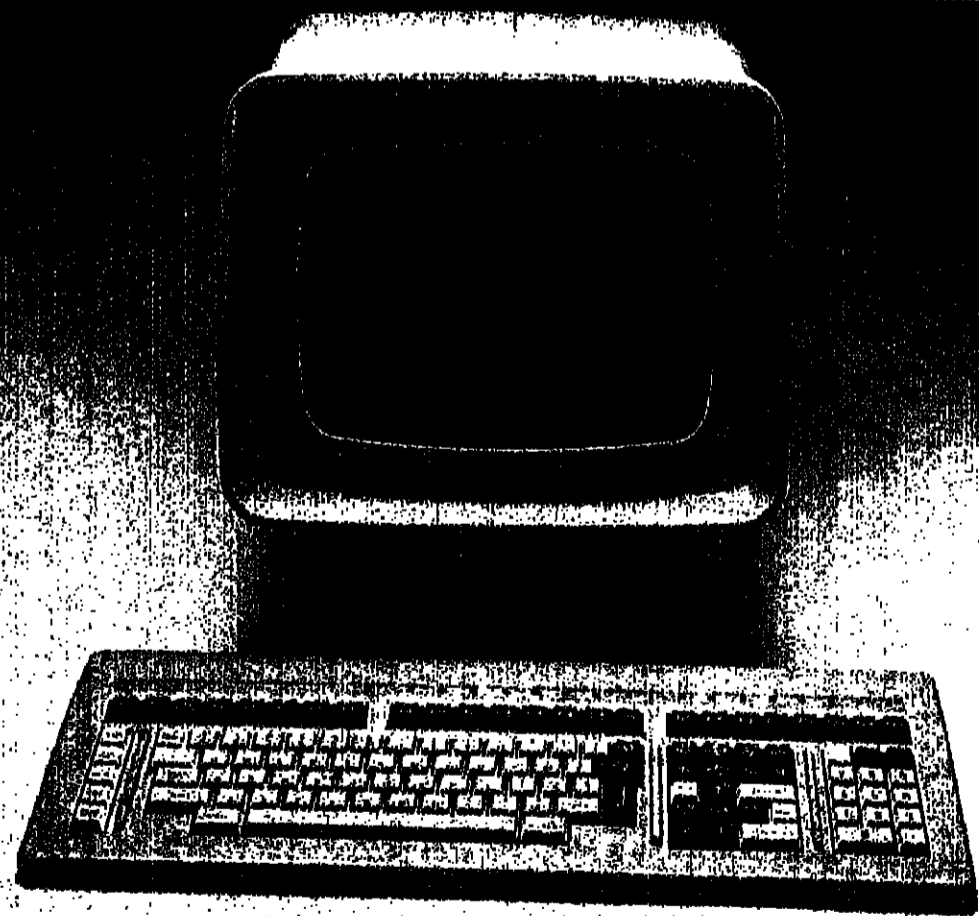
Networking could introduce a whole new CAD/CAM system design

but in the meantime we have some European low-cost terminals, and top-end rugged CAD/CAM models also have the middle-range stations, based mainly on 68000 models. These models can be grouped in clusters of four units with a central multi-user design project — terminals, but of as much value in the broad CAD/CAM market.

What's more, networking can introduce a whole new CAD/CAM system design in this area. In a way, of all places, the national search and development centre currently engaged in a project to implement a full CAD/CAM which would obviate the need of locating design files in a central Winchester unit.

There, a team is implementing the Smalltalk operating system on the network, with licence from Xerox. Smalltalk built around windowed menus from which the user can interact with the system via a desktop mouse — the Lisa is believed to be based on it in spite of what Apple says — using the system, a designer can call up pages of files from CPUs on the network, edit them and, if he wished, plot the contents of each onto his or her alongside one another. In this he could check progress and late them to form the final integrated package. And the project terminal is his only tool.

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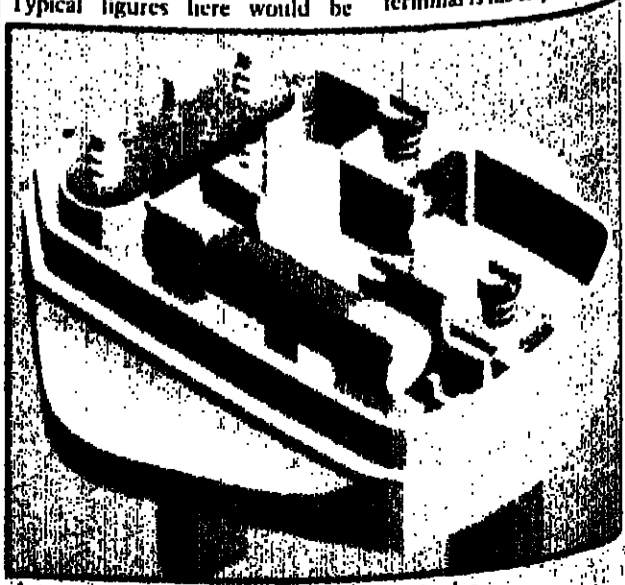
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A computer-generated 3D model of a three-pin plug.

There's only one likely ICL emulator

Paul Walton says one company is romping away with the ICL market

COMPANIES that supply IBM compatible terminals are common. But only one firm makes its living by emulating ICL displays.

Hytec is romping away with a respectable share of the ICL plug compatible terminal business, which the larger IBM suppliers have either shunned, or have failed to capitalise upon. Ferranti, Data-type and, lately, Kacal and Harris have all tried and failed to make much impression on an ICL terminal market, which, though tiny by IBM standards, was worth over £14 million last year and is about to boom.

There are about 100,000 fewer ICL terminals around, or one fifth of IBM's 125,000 total population in the UK, despite the fact that IBM's lead over ICL in terms of mainframes is slight. The 25,000 or so ICL terminals are mainly to be found on the larger mainframes running teleprocessing systems.

These 1500 and more intelligent 7500 editing terminals are now being replaced by ICL's DRS 200 range of multi-microcomputers.

There are several reasons given for the scarcity of ICL terminals, which include its history of batch processing as opposed to online terminal work; its software structures, which were developed along batch lines; and the difficulty of mastering ICL communications protocols in the face of even greater secrecy than IBM exhibits on the release of data. There is also the fact that American terminal suppliers did not see any benefit in developing rather limited ICL terminals for such a small market.

ICL terminals are about one-fifth of IBM's 125,000 total population in the UK

Recent figures from the International Data Corporation (IDC) on the UK terminal market to 1988 show that while ICL lies third in the terminal ratings, behind IBM and Digital Equipment (DEC), there is growth in one sector of its market.

IDC predicts that ICL will maintain and even increase its 13% lead in the shipment of intelligent editing terminals. Shipments were close on several thousand, worth some £8½ million, in 1982. This could grow to nearly 18,000 terminals shipped by 1988, worth over £20 million on current figures.

The success of DRS 20 in extending the ICL terminal market, on top of replacements, gives ICL reason to hope that it is catching up with IBM in the supply of terminals.

According to John Garrick, a director of ICL TP specialist Telecomputing and a long time observer of the market in terminals that use his company's software, there have been some pretty insurmountable problems holding back the growth of this population.

He said that when Harris entered the ICL plug compatible terminal market early in 1982, it quite wrongly assumed that because there were around 25,000 terminals at around 3,000 medium to large ICL mainframe sites that it could make up the shortfall by marketing a price competitive product which already had a major share of the IBM market.

He said that Telecomputing's own research on the large numbers of ICL sites, which it supplies with TFS teleprocessing software, showed that rather than seven or

eight terminals, as Harris thought, there were in fact closer to 30 being used.

While this is nowhere near the hundreds of terminals found at IBM sites, "it is all that the poor ICL user can often support, or wants to have", Garrick added.

This poor market research on the part of Harris has cost it dearly, with sales amounting to no more than 1% of its IBM terminal business in the UK. But the company now has a better understanding of what makes the ICL user tick and could try again with cheaper terminals soon.

The vast majority of ICL terminals installed are editing terminals, unlike the IBM population, and these are used for systems development as much as for applications work.

This, however, is less true for one small part of the ICL terminal market — its System Ten and System 25 minicomputer users.

Peter Comyn-Noyce is the sales manager of ICL communications specialist Barron McCann. It is the largest supplier of System Ten/25 terminals, because it has developed a cheaper version of the ICL comms box, known as the Stencil, needed to attach remote terminals.

The Mite box it developed costs the same as Stencil, but each one can hang up to five devices off an ICL minicomputer, whereas an ICL box is needed for each new device such as a terminal or printer.

Comyn-Noyce said that Barron McCann was looking around for another terminal it could sell with the Mite, after its American supplier, GTC, recently went bust. It will probably offer a Televideo terminal, made in this country by Case, as direct competition to the new ICL model 85 terminal.

System 25 sites may only use small machines, but they often use a great many terminals in larger distributed processing networks than many ICL mainframes attempt. Comyn-Noyce said that there is the potential for the sale of some 30,000 terminals to 2,500 sites.

There are no difficult communications protocols to overcome with the System 25, and simple terminals are used along with the increasingly common connection of microcomputers. Barron McCann sells many refurbished model 82 terminals, which the older System Ten users save and run for many years.

Connecting terminals to an ICL VME operating system mainframe is far more difficult than working with an IBM MVS machine, according to Garrick. The ICL "link control" protocols stem from the same international basic mode standards as IBM's HDLC, but have diverged as the successive C-01, C-02 and C-03 ICL protocols emerged at the turn of the 1980s.

Two of Garrick's key communications staff have recently left Telecomputing to set up the specialist Network Designers firm, which will offer C-03 links for micros, such as the Logica Vitesse or Apple, direct to the supplier, and to the IBM PC and the ACT Sirius through dealers.

Hytec is the only firm which has made a dent on the ICL terminal market to date. It was set up by Chris Howe-Davis and Chris Swinbank, who also left Telecomputing.

Harris was the last IBM plug compatible supplier to try and fail, but it is about to come back for a second bite.

Swinbank said that Hytec was

not content with the 4% it had carved from the ICL terminal market since January 1981. The company's embarking on an ambitious programme of development, which should make it increasingly independent thanks to backing from the City.

"We're number two to ICL, but there is still a great deal of business out there. Having sold the first terminals to replace older ICL terminals, such as the 7500, we then decided to go up market and challenge some of the more sophisticated DRS 20 models," Swinbank said.

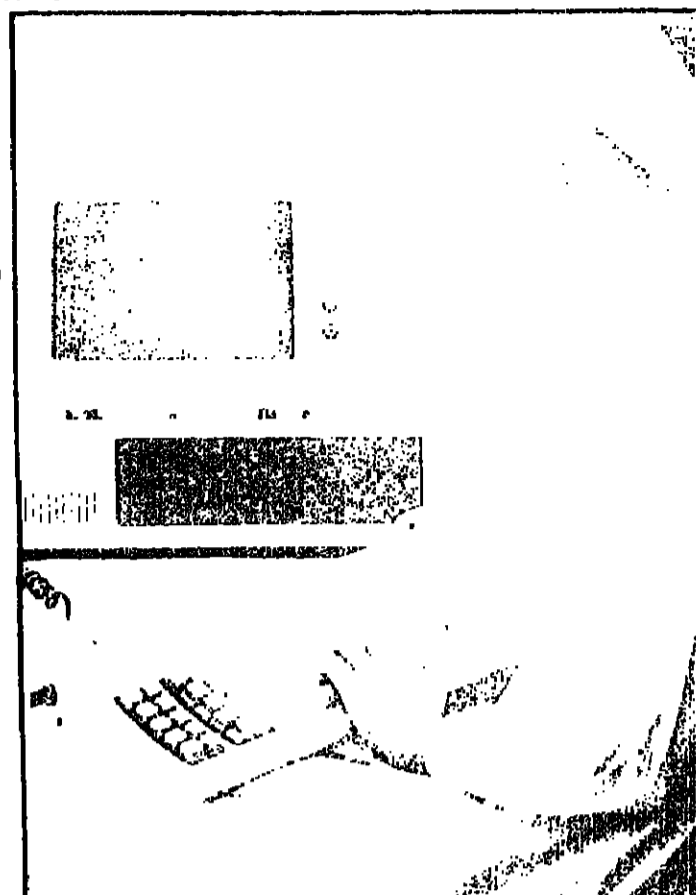
Earlier this year, Hytec launched its own range of Prelude terminals running on the faster 280B chip and with more software, which will allow it to com-

pete increasingly with DRS 20 machines.

Hytec is now working on the next range of machines, which it will launch in 1985, thanks largely to an extra million pounds of City backing recently. These 32-bit machines will break the ICL terminal link in favour of Hytec.

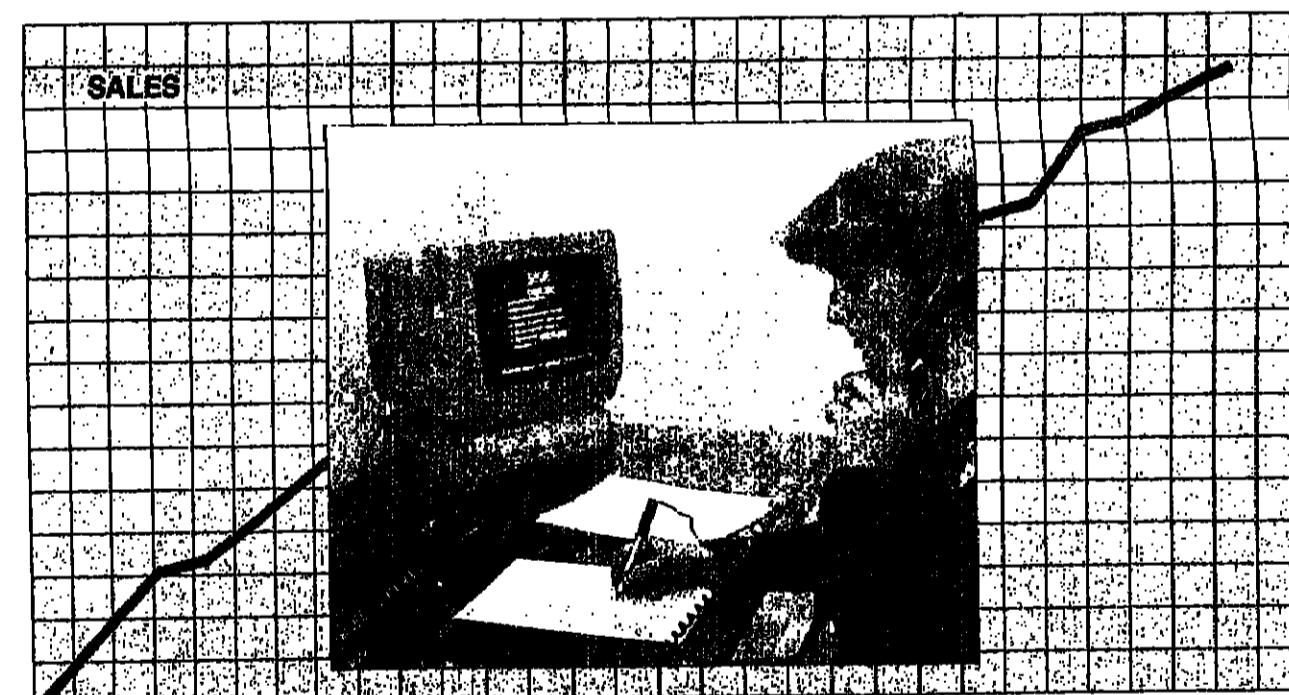
Harris is hoped that it would give Hytec some competition back at the start of 1982, marketing manager Mike Baker said: "But we've not sold a lot since then. The main interest has been from those people who have been moving from ICL to IBM."

Developing the ability to do ICL C-03 communications, with its 9200 range has given Harris just 30 terminal sales to four sites after 20 or more months.



The ICL plug-compatible market is small by compared to the IBM market.

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The rise and rise story on the import/export markets

John Aczel plots the big success that terminals, especially those with large interactive facilities, have met with

DEMAND for computer terminals has been growing considerably over the past 12 months and it is expected to accelerate over the next few years. It is estimated that the market is growing by between 15 and 20% per year and sales of some terminals, particularly those with considerable interactive facilities, are showing an even higher rate of growth.

In the official statistics, it is difficult to identify precisely computer terminals, as the figures do not split them into types of units. In addition, a number of personal computers and micros are also being used for remote access to mainframes, so that the information on the terminal sector is incomplete.

Recently, the International Data Corporation (IDC) carried out an exhaustive survey on the terminal



The terminal's functions are likely to change drastically and it will become an intelligent workstation in its own right, with processing and interactive capabilities.

Total imports for 1983 could reach £50 million compared with £32 million last year

market with forecasts about trends over the next six years. According to IDC, nearly 170,000 terminals were sold in the UK during 1982 with a total market value of £202 million. Competition in this market has been quite fierce, IBM holding the top position with 13% of total unit shipments; in second place was Digital Equipment, with about 9%, and, in third place, ICL with 7%.

It is interesting to monitor the latest trends in the terminal sector by looking at the figures for British imports. It is well-known that a significant proportion of terminals sold in the UK come in from overseas, and these account for a growing share of the total market. Thus, during the first six months of 1983, overall imports rose by 18% in value and it is believed that, in the second half, an even faster rate of growth will emerge.

The trade figures have to be treated with considerable caution due to the fact that again the classification for terminals is not very precise. For one thing, they do not include smaller computers and micros, which are normally classified under a different heading. In addition, some terminals may be included under peripheral products, such as display units and printers, so that the heading of terminals is not comprehensive by any means.

In addition, imports of terminals for graphical purposes and for engineering design, such as CAD/CAM, are shown under a separate heading, so that these units have been excluded from the analysis. CAD/CAM has been growing in significance and terminals are being increasingly used in this connection, but details about these machines are not available in the official figures.

Nevertheless, the import data give some indication of the latest situation prevailing in the terminal field, even though the figures are far from being all-embracing. It appears that, in the first six months of 1983, imports of general purpose terminals were valued at £19 million as against £16 million in the same period in 1982. For 1983 as a whole, it is reckoned that total imports could be in the region of £50 million against £32 million in the previous year.

In terms of numbers, about 26,000 terminals came into the UK during the first half of 1983. This was slightly less than that recorded in the corresponding period in

	Jan-June 1983	Jan-June 1982
	£000	£000
Belgium-Luxembourg	1,598	380
Canada	132	400
Denmark	103	54
France	1,411	1,271
Germany (West)	1,265	476
Hong Kong	17	332
Ireland	932	524
Italy	3,043	2,577
Japan	542	249
Norway	521	22
Netherlands	617	812
South Africa	13	34
Sweden	217	223
Switzerland	232	116
US	7,755	8,214

Table 1 - British imports of terminals (by value)

1982, though, if current trends continue, the level of imports is likely to be higher than that seen in 1982, when it amounted to around 60,000 units.

At present, the price of imported terminals has been going up and has averaged around £700 per unit. Evidently, some of this increase has been due to the fall in the value of sterling against other currencies, particularly the dollar and the Deutschmark, but it is unlikely that prices will go up much further, due to intense competition in the market.

Total shipment of around 400,000 units is likely by 1988 - overall sales could be near £420 million

The United States has continued to be the main supplier of computer terminals and its sales were valued at £7.8 million in the first half of 1983. This was slightly down compared to the same period in 1982, but American deliveries still accounted for 40% of total UK imports during this period.

Some of the continental suppliers, however, have been stepping up their sales, particularly West Germany. Its turnover nearly trebled in value and reached £1.3 million while there has been considerable growth in other European countries. For instance, imports from Belgium amounted to £1.6 million in the first six months of 1983 and those from Italy have risen by 15% to £3 million. Imports from Ireland have

	Jan-June 1983	Jan-June 1982
	£000	No.
January	2,620	2,579
February	2,000	2,559
March	4,195	5,927
April	1,764	1,909
May	4,388	7,304
June	3,706	5,428
July	3,776	5,511

Table 3 - Trend in British imports of terminals in 1983

	Jan-June 1983	Jan-June 1982
	No.	No.
Belgium-Luxembourg	1,532	173
Canada	98	417
Denmark	352	62
France	1,470	3,133
Germany (West)	4,038	541
Ireland	574	237
Italy	1,280	671
Japan	704	322
Netherlands	1,078	717
Norway	483	28
South Africa	5	28
Sweden	565	699
Switzerland	344	20
US	12,459	11,097

Table 2 - British imports of terminals (by volume)

	Jan-June 1983	Jan-June 1982
	£000	No.
January	357	327
February	897	711
March	832	856
April	974	2,653
May	1,019	645
June	1,092	2,957
July	1,121	4,070

Table 6 - Trend in British exports of terminals in 1983

	Jan-June 1983	Jan-June 1982
	No.	No.
Belgium-Luxembourg	152	173
Canada	98	417
Denmark	352	62
France	1,470	3,133
Germany (West)	4,038	541
Ireland	574	237
Italy	1,280	671
Japan	704	322
Netherlands	1,078	717
Norway	483	28
South Africa	5	28
Sweden	565	699
Switzerland	344	20
US	12,459	11,097

Table 5 - British exports of terminals (by volume)

	Jan-June 1983	Jan-June 1982
	£000	£000
Australia	377	248
Austria	37	185
Belgium-Luxembourg	70	177
Denmark	69	175
France	352	751
Germany (West)	677	526
Italy	467	426
Japan	68	211
Netherlands	469	140
Saudi Arabia	102	66
South Africa	364	1
Spain	47	224
Switzerland	184	221
US	949	221
USSR	24	521

Table 4 - British exports of terminals (by value)

	Jan-June 1983	Jan-June 1982
	No.	No.
Australia	172	101
Austria	10	21
Belgium-Luxembourg	100	48
Denmark	75	24
France	166	535
Germany (West)	640	269
Italy	2,338	150
Japan	14	79
Netherlands	2,129	89
Saudi Arabia	111	67
South Africa	612	24
Spain	10	40
Switzerland	95	205
US	879	376
USSR	2	11

Table 7 - British exports of terminals (by volume)

also been growing and reached over £900,000 in the first six months of 1983.

Evidently, the fact that direct imports from the United States have fallen should not be given too much significance because some of these deliveries have been diverted to American companies based in Europe.

For instance, a firm like IBM has an international network of companies producing terminals and it is quite possible that its sales in the UK could change pattern, with products being imported from its continental subsidiaries rather than from its US.

The position of Far Eastern producers is still quite small in the British market. For instance, Japan had sales of just over £500,000 in the first six months of 1983 which accounted for less than 5% of total British deliveries. It is believed that these imports have risen, but Japan was still only of marginal importance in the terminal sector.

was about the same as in the six months of 1982, but, by volume, there has been a marked rise, with over 8,000 terminals sold abroad during the first half of 1983.

Most of these terminals have been exported to Europe and strong growth in deliveries to the EEC has been seen. In particular, sales of terminals to Italy rose to over 2,300 units, while those to the Netherlands went up to 2,000 units.

These markets have now overtaken the US in volume, though not by value. Thus, sales of terminals for the first six months of 1983 reached nearly 11 million and represented 28% of total deliveries during that period.

Competition in this market has been fierce - IBM tops the list with 13% of total unit shipments

In some of the European countries, the trend has been mixed and sales to France dropped sharply in value. Deliveries to France nearly halved in value, amounting to £350,000 in 1983, a similar fall was also seen in Switzerland, Belgium and Austria.

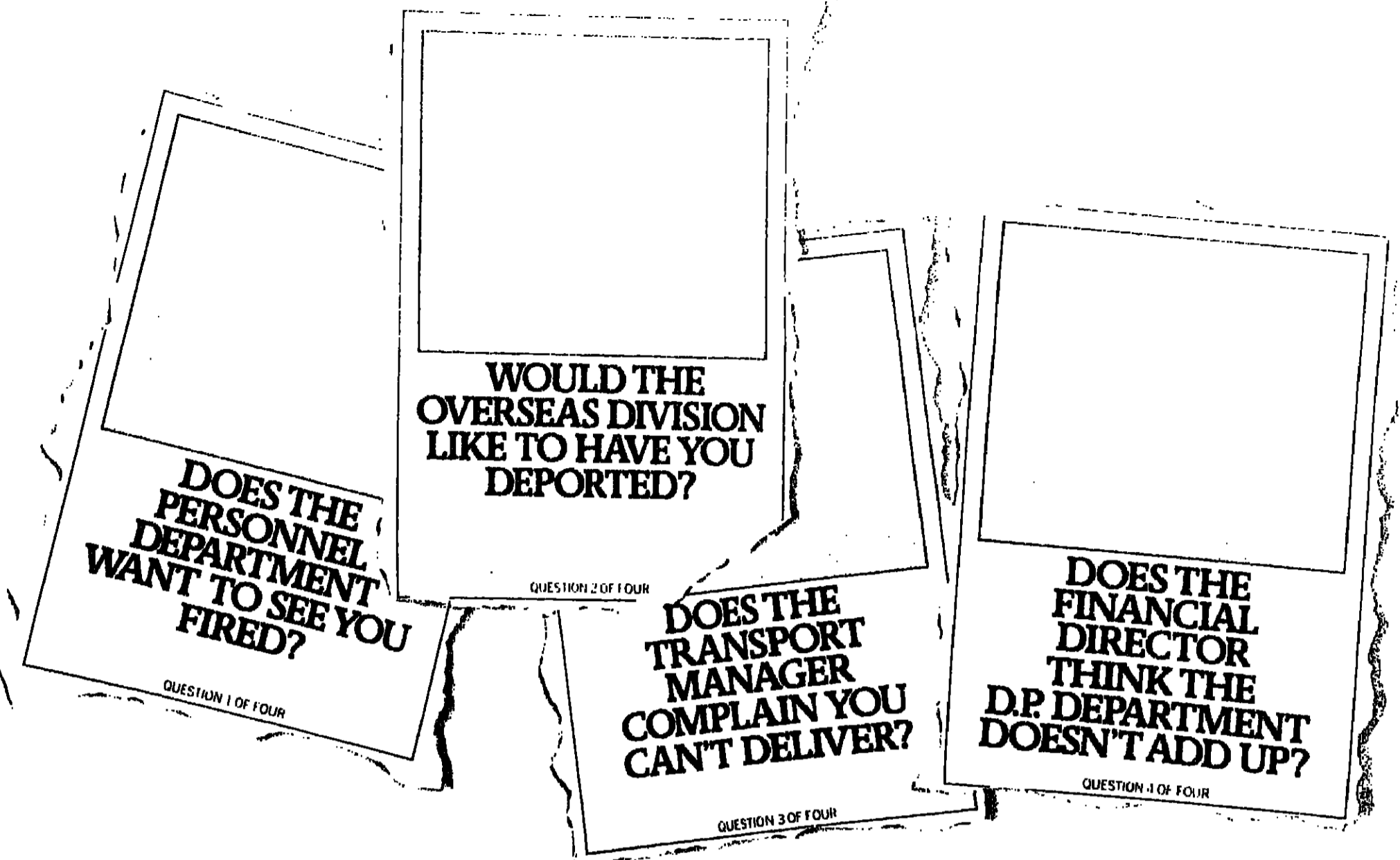
Increasing numbers of deliveries, however, have been reported in other regions of the world, particularly in Africa and the Middle East. Higher deliveries of terminals have been seen in Saudi Arabia, while South Africa has also proved to be a lucrative market, with exports of over £360,000 during the first half of 1983.

But despite these exports, Britain continued to have a deficit in the terminal sector and imports exceeded exports by £13 million in the first half of 1983. This gap compared with £11 million in the same period in 1982, and, on present trends, it is possible that the imbalance for the whole of 1983 could be in the region of £20 million.

According to IDC, the market for terminals will continue to grow rapidly and an average of around 16% in volume is expected up to 1988. Thus, a shipment of around 400,000 units is likely by 1988, though by value

the increase will be more limited. Overall sales could be in the region of £420 million, even though there will be some considerable price reductions for many terminals during this period.

Undoubtedly, there will be many changes occurring in the terminal market and costs and prices are likely to fall markedly. In particular, component costs are likely to decline even further while the capabilities of terminals will increase rapidly. Their functions are likely to change drastically and they will become intelligent workstations in their own right, with considerable processing facilities and interactive capabilities. These technical developments will boost the terminal market in the coming years.



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TERMINALS

Attention turns to workstations

David Casey on how yesterday's innovations are tomorrow's museum pieces

If exhibitors at recent information technology exhibitions provide any indication, the standalone word processor is a product waiting to take its place in the Science Museum.

Systems hailed as the most significant development in the office since the electric typewriter are rapidly becoming obsolete as all they can do is handle the input and editing of text. Attention is turning from dedicated word processing to the broader arena of office automation, and the evolution of the multi-purpose "executive" workstation combining the roles of word processor, desk top micro and computer terminal.

Executive interest in the automated office has been an important factor in the evolution from word

processor. While it was rare for a highly-paid businessman to create material on a conventional typewriter, keying information to a video screen can prove a cost-effective use of his resources: there is a saving in dictation time, with its time-consuming transcription and corrections.

But for an executive to derive the maximum benefit from direct keyboard entry, all the information required for the job should be accessible without recourse to filing cabinets or the microfiche reader.

As an occasional user of text and data handling facilities, the professional manager makes different demands from a secretary. It is essential that the sequence of commands needed to control the system is

easy to remember without continuous practice; the user is aided by readily accessible help screens or unambiguous prompts.

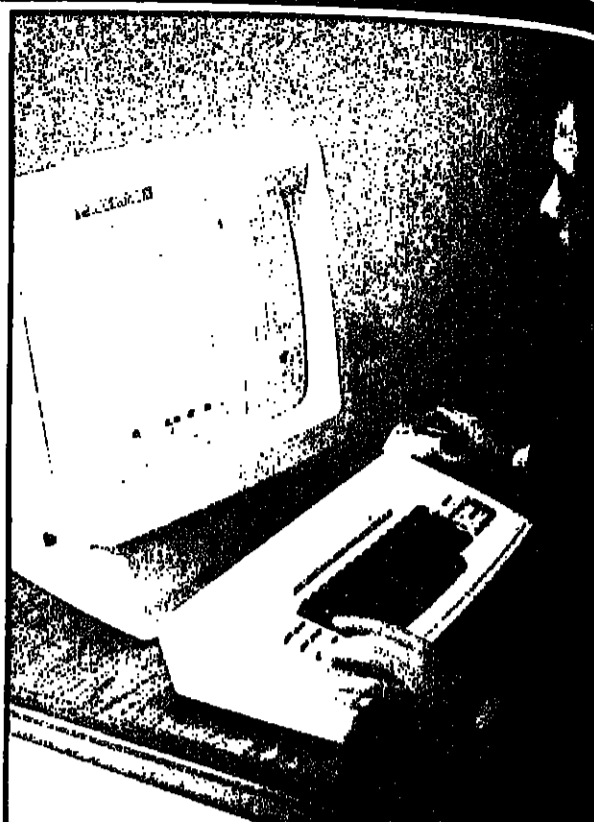
Electronic mail has come to be regarded almost as a pre-requisite for an executive workstation. The procedure must involve the minimum amount of keyboarding if it is to prove acceptable, however. Where a manager sends a circular to the same group of users at regular intervals, the system should be capable of holding this list of destination "addresses". A single command would be required to transmit the document to a dozen or more users.

Personal diary systems were seen as a gimmick when they first appeared on workstations. Used with care, they can replace the

decks diary, and make it much easier for a manager organising a meeting to guarantee the availability of everyone who will be involved. Linking the diary to the terminal's in-tray is an invaluable feature in such systems: when the user logs on, the appointments for the current day are displayed as priorities.

High resolution screens are able to display a range of typestyles and graphics symbols and provide a more effective interface between an executive and the system, irrespective of whether it provides electronic mail and a diary. The fact was first exploited successfully by Xerox when it launched the 8000 Information System in the UK two years ago.

The 8010 executive workstation



A Xerox workstation

associated with the Xerox system set a precedent in its use of a hand-held controller to move the cursor around the screen. This mouse has been taken up by manufacturers on both sides of the Atlantic to provide a method of access which reduced dependency on a conventional keyboard and with it, the need for proficiency in using all but the basic alphanumeric keys.

Functions are called up by moving the mouse to take the cursor arrow to a pictorial representation of the routine in a menu at the edge of the screen.

Sending a file to be printed, for example, involves pointing at a thumbnail sketch of a printer and confirming the selection, with the typestyle, line width and character size are selected in a similar way from a list of specifications.

Being able to work in more than one document at the same time is a positive feature of an executive workstation: in theory, unrelated information from text files, data records, and graphics libraries could be manipulated in separate windows on the screen, then brought together into a single viewing area for storage and subsequent printing.

If the Xerox 8010 and other manufacturers' terminals which have followed it on the market were confined to material generated wholly within the system, the applications of an integrated workstation would be limited.

Compatibility with DP vendors' hardware was therefore an important feature in the development of the 8010 workstation: a user had to be able to call up information from other computers with no more difficulty than processing a document stored on a local disc.

The ability to mix and merge different types of material on to the screen of the Xerox system had to be retained, irrespective of the communications protocols involved.

As a feature of an executive workstation - rather than a traditional DP terminal - three links have to be transparent to the user. There should be no restriction on the type of external systems with which the station should communicate.

In a typical installation, therefore, one screen window could be configured as a 3278 terminal, allowing data to be brought down from an IBM mainframe. The same convention might be drawing documents from a non-Xerox wp system, with a third window online to a Hewlett-Packard machine.

Extending the scope of automation into voice mail and storage is a development technique already used: Wang is following this path, and has added facility to the workstation to use a voice system, which was introduced to the UK in the quarter of 1982.

Alliance designed a multi-user office automation system providing an address of facilities over Wang's Office Information System, though retaining compatibility with systems ranging from Wang professional computer company's VS supermini.

Voice messaging is the recent feature of Alliance workstation. The phone receiver records a message which is then digitised for storage, but the three-minute limit is sufficient to accept a message, or accept a message.

The electronic mail concept of the Alliance allows users to work with text. Recording

Systems hailed as the most significant development in the office since the electronic typewriter are becoming obsolete

the in-tray at the destination checked in the same way as a conventional document: "this" text indicates the points in a

In providing digital mail its information management processor (Imp), the British factor Office Technology adopted a similar approach. Wang. The Imp combines a Xerox 8000 from the early 1970s. Their progress to the executive workstation.

The Imp, Alliance and Xerox 8000 are from the early 1970s. Their progress to the executive workstation. The Imp, Alliance and Xerox 8000 are from the early 1970s. Their progress to the executive workstation.

By maintaining total compatibility with the IBM PC and the designers have needed to create a workstation specifically for the system.

TERMINALS

This baby has grown with the times . . .

Mothercare used its first systems for stock control. Nigel Temple looks at how it has progressed since

POINT of sale equipment, staff training and bar coding - all have featured prominently in the computer-thinking of Mothercare, the mother and baby retail chain both 20 years ago.

With 210 stores in the UK and another 183 in Europe and the US, Mothercare has had to adapt quickly to the advances made in computer technology since the mid-sixties.

Stock control was the first application to be computerised, as control of stocks was seen as the basis of sales.

In the late 1970s, the management were faced with a severe shortage of stock space. The problem was how to reduce the amount of merchandise physically held in the stores without losing sales. Many stores had been on the same site for over 15 years, and in several stores they wished to use the stockroom for further selling space. Mothercare decided that using outside stockrooms or delivering goods from a nearby larger store was the answer.

To help with this logistical problem, several programs were written which tried to forecast demand in detail. The plan was to deliver the merchandise direct each day from a local large store for immediate display on the sales floor. However, forecasting demand proved impossible, due to the unpredictable English weather, the fickle nature of the British consumer and the difficulties of maintaining an accurate stock control on a daily basis.

Eventually, in 1979, Computer Analysts and Programmers (CAP) were called in to conduct a survey of the ways in which the shelves could be filled on a daily basis from a remote location. Several different systems such as posting hand-written lists, remote video screens, optical character recognition and facsimile transmission were all studied in detail.

However, the final recommendation was for the addition of barcodes to the shelf requirement lists, and the use of hand-held

The new re-ordering system integrates extremely well with the old one and it's based on a very simple concept

computers. Several alternative manufacturers were investigated, amongst them a Unilever subsidiary. The final recommendation was for MSI Data International equipment, as it was an established manufacturer with a wide user base and considerable experience in this area. One hand-held computer was to be used at each store with an acoustic coupler which could be attached to a telephone and transmit the information to the central computer.

The system Mothercare adopted is to have a 100-page catalogue, with each page covered in perspex. The catalogue contains colour pictures of each item of stock, with a brief product description such as "baby's top lemon" or "papa's plastic frilly", a stock code

number, the price and the appropriate barcode.

A member of staff systematically goes around the shelves with the catalogue. The quantity of each article to be ordered is written on the perspex with a felt tip pen. In the back room of the store a wand reader is used to enter the re-order information into the hand-held computer. If three articles are required, the wand is passed over the bar code three times. Alternatively, the number three can be keyed in. As this is such a simple operation, a standard program was used.

However, the hand-held computer is fully programmable, should there have been a special application.

After the information has been entered into the terminal, an acoustic coupler is connected to a standard telephone, and the computer centre at head office is

The problem was how to reduce the amount of merchandise physically held in the stores without losing sales

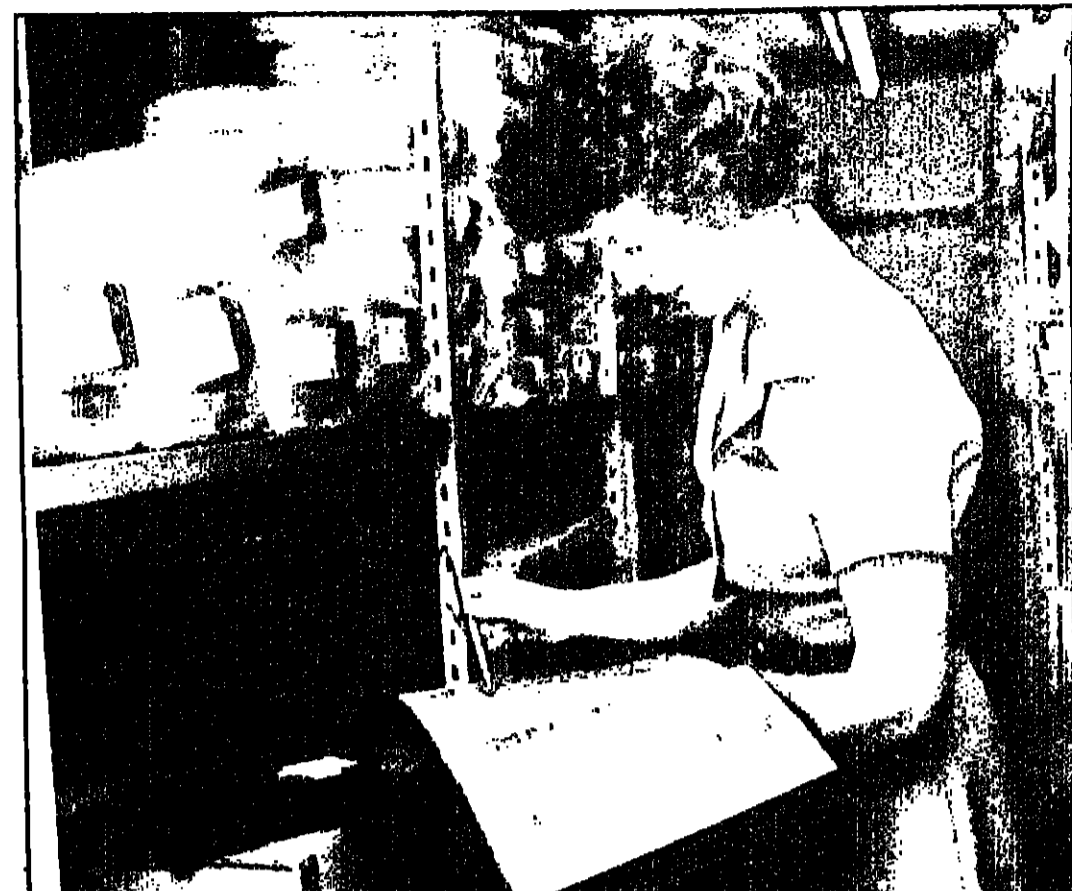
called, when an off-line tape machine is waiting. This records the stock requirements of the stores on a temporary basis, until the information is transferred on to the mainframe. This operation is carried out three times a day.

Having received the list of requirements from all the satellite stores, a picking list is produced for the warehouse store, reserving approximately three weeks of stock for the warehouse store itself. This is sent to the satellite stores by courier or Datapost. If the satellite store sends out its list in the morning, it will receive the goods by the following morning.

The satellite store then checks the picking list to ensure that the correct goods have been received. The terminal is then used to inform the central computer of any over or under deliveries. This information is transmitted at the same time as the list of stock requirements.

Mothercare does not operate a central warehousing system. Instead, there are 16 stores with surplus warehousing space which supply satellite stores without a stockroom. For example, Bradford acts as a warehouse store for Sheffield and Woking.

There are three stages of development for the system. To begin with, a fairly small store might have its own stockroom. Secondly, as business expands, the stockroom may be converted into further selling space, and the store will become a satellite to a warehouse store. At this stage the hand-held computer system is used to speed up the delivery of goods to the satellite store. Finally, should still more space be required, then a larger site must be sought. Using this system does away with the need to rent expensive outside stockrooms. Besides saving on rent and security costs, the new stock control method has proved much more convenient.



Bar-coding has given a new lease of life to re-stocking at Mothercare.

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Sponsored jointly by the Peripherals Suppliers Association and 'Systems International', Peripherals '84 has justifiably been named the *only* specialist show for computer professionals.

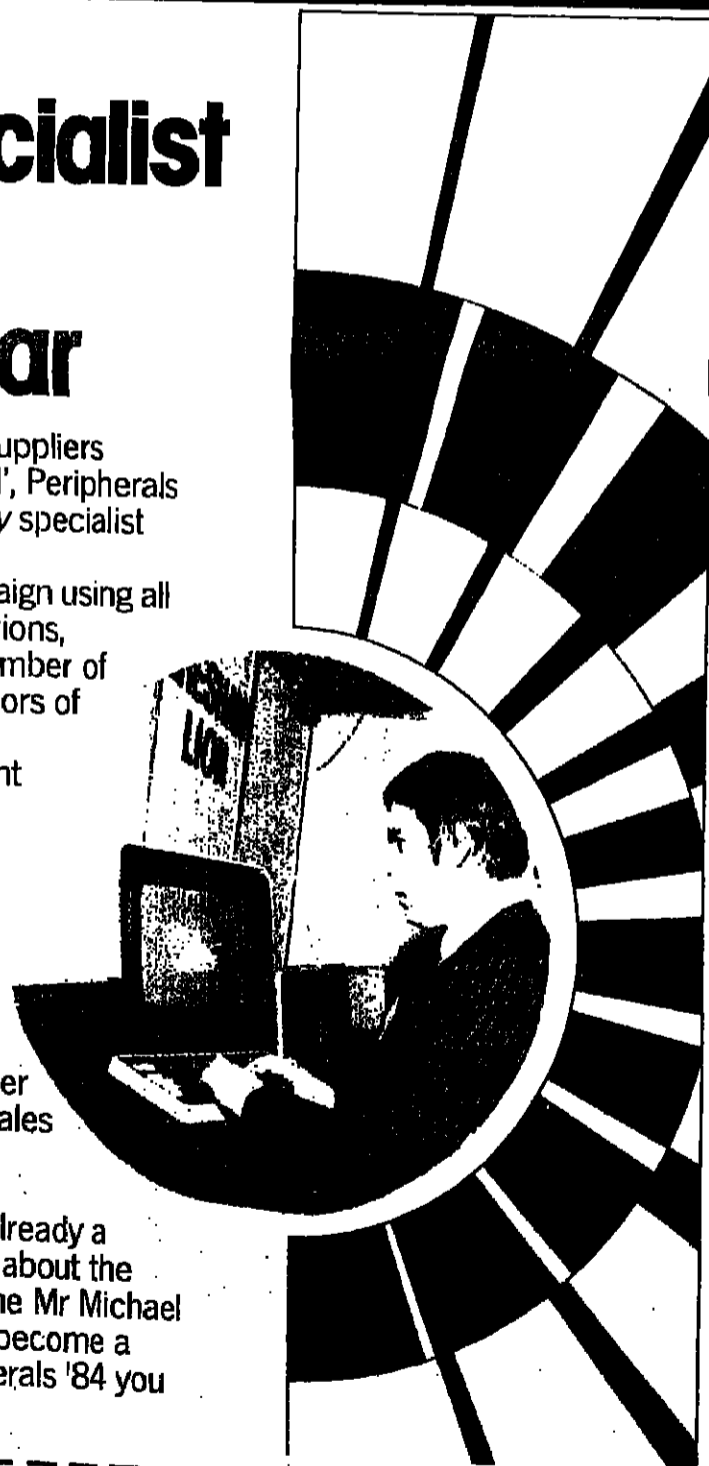
Through a massive publicity campaign using all the key systems development publications, Peripherals '84 will attract a record number of visitors from purchasing/specifier sectors of this continually expanding market. Attendance in 1983 was up 25 per cent on 1982. And 1984 is all set to be the biggest and most successful to date.

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This is the key specialist event in the Computer Year - ACT NOW - for further information telephone Ian Hardman, Sales Manager on 01-661-3022.

PSA members are eligible for a preferential stand rate. If you are not already a member and would like to know more about the association's aims and objectives phone Mr Michael Perry on 0908 668118. Provided you become a member before the opening of Peripherals '84 you can claim the special members rate.



For more information return this coupon to Ian Hardman, Peripherals '84, Room L216, Quadrant House, The Quadrant, Sutton, Surrey SM2 5AS.

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1984
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Dear Bill

What a lark I've been having with the big bash in Blackpool taking up so much of the Boss's time. Having made sure that the party faithful were all locked up in intense debate, it's any wonder that I should slip quietly back here, kick off my shoes and pad around as if I owned the place? Marvellous feeling of power - it provides an insight into what gives M the strength to deliver the piercing blue eyes look. In fact I tried it out in the mirror, and damned near scared the life out of myself.



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PRODUCTS



The AES 7100 integrated office system which can be tailored to meet individual customer needs.

Immediate access to up to 256 pages of stored text

AES Data (UK) has introduced the AES 7100 integrated office system, which can be tailored to meet individual customer requirements for word processing, business computing and communications.

The design of the system is aimed to offer optimum operator comfort, and both the screen and slimline keyboard can be tilted and positioned to meet each operator's preferred manner of working.

The system has a choice of dual mini diskette drives, which can provide immediate access up to a maximum of 256 pages of stored text. A range of high quality 45 chips bi-directional daisywheel printers can be supported by the AES 7100, including wide track printers for special formats.

The modularity of software, memory, communications and personal computing capabilities enables the power and performance of the AES 7100 to be extended at any time. Comprehensive AES software for the new system includes document processing, forms handling, financial reports, records management and AES user-programming for the automation of time-consuming and repetitive tasks.

Through the industry-standard CPMR operating system, the AES 7100 has access to the full range of microcomputer software for business applications.

An extensive range of communications options is available, including emulation protocols for batch and interactive communica-

tions with mainframe computers, phototypesetters and other office equipment. AES Point-to-Point enables communication with all other AES products, wherever they are located; and the AES Multi-Link allows permanent cable connection of the AES 7100 with Multiplex or AES 7200 cluster systems.

The AES 7100 is fully compatible with the existing range of AES standalone word processors. The connection with the AES 7200 provides access to the entire storage capacity of the more powerful system.

AES Data (CW), 170 Windmill Road, Sunbury-on-Thames, Middlesex TW16 7HH. Tel: (09327) 85631.

WP added to the electronic typewriter

THE decentralisation of word processing facilities, while utilising existing electronic typewriters, is the aim behind a new add-on device from Lion Office Equipment.

Called Lexoriter, it will give full word processing abilities to many brands of electronic typewriters.

"There are over 300,000 electronic typewriters in use in the UK, and people are now beginning to realise the basic machine is very limited. That leaves two alternatives - throw them out or buy a device like Lexoriter," said Bob Travis, Lion's marketing manager.

Most electronic typewriters, which cost about £1,600, have been bought in the last three years and, according to Lion, it is a boom market with anticipated sales of 250,000 per year. And it is this market that Lion aims to sell into.

Lexoriter consists of a simple-to-operate keyboard, 64K RAM and a 12in display screen. The single disc drive version costs £1,795 and the double £2,195.



The Lexoriter from Lion Office Equipment.

"Lexoriter allows companies to progress at their own pace towards office automation," claimed Travis. "They can change as their needs change. There is also a big cost factor - with Lexoriter another £2,000 gives the equivalent of a standalone word processor."

According to Lion, there is con-

siderable evidence that many typists who resist the introduction of word processors will find Lexoriter acceptable, as they retain their own machine.

Lion Office Equipment (CW), International House, Windmill Road, Sunbury-on-Thames, Middlesex TW16 7HR. Tel: (09327) 85666.

Double speed data switches

GANDOLF Data's new SE Series of PACX IV data switches is claimed to provide twice the system capacity and speed of any other transparent data PBX.

The systems permit unrestricted connectivity in six basic configurations ranging in size from 512 channels (256 terminals and 256 ports) to 1,500 channels (1,024 terminals and 512 ports). The modular design of the SE series and standard PACX IV switching systems allows easy field expansion and upgrades to meet data networking requirements, according to Gandalf.

All channels in a PACX IV SE system can operate transparently at speeds of up to 9,600 bps asynchronous and/or 19,200 bps synchronous. SE Series switches support an aggregate data throughput of 9.8 Mbps. This aggregate data rate exceeds that of most character switches while not imposing any of the data restrictions typical of character mode data PBXs.

On SE Series systems each channel has 100% bandwidth efficiency, and all available bandwidth can be used with negligible throughput delay, says Gandalf.

The SE Series features a new high speed card set consisting of a micro board, controller board, crosspoint board and a common logic chassis. This card set is supplied in a separate common logic shelf that will also accommodate a second card set for redundancy. Existing PACX systems can be upgraded to include this new logic set.

The SE micro board contains the major system control software and interfaces. It performs functions such as maintaining all connection control intelligence, and monitoring the status of all channels. The micro board also contains on- and off-line test diagnostic programs and battery back-up logic of the system configuration.

Gandalf Data (CW), 100 Colonnade Road N, Nepean, Ontario K2E 7M4. Tel: (613) 226-6500.

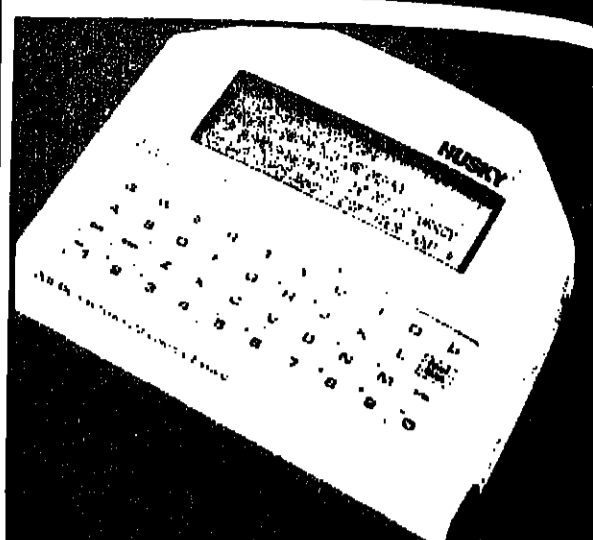
Autodialler for Xtec

THE Xtec range of low-cost modems is now available with an optional autodial facility (XM-AD).

Providing terminal or computer control of dialling, the XM-AD features Ascii or Ebcidic data interface with full or half duplex control to give optional local echo during call initiation.

A handsfree procedure is used to simplify the user interface and calls may be initiated and terminated using simple keyboard commands.

Xtec (CW), High Street, Hartley Wintney, Basingstoke, Hants. RG27 6PB. Tel: (025 126) 4222.



The analogue input version of the Husky.

Analogue input option for Husky micro

AN analogue input option is now available for the Husky portable microcomputer, allowing it to be used as a genuinely programmable test and measuring instrument with built-in mass storage capabilities.

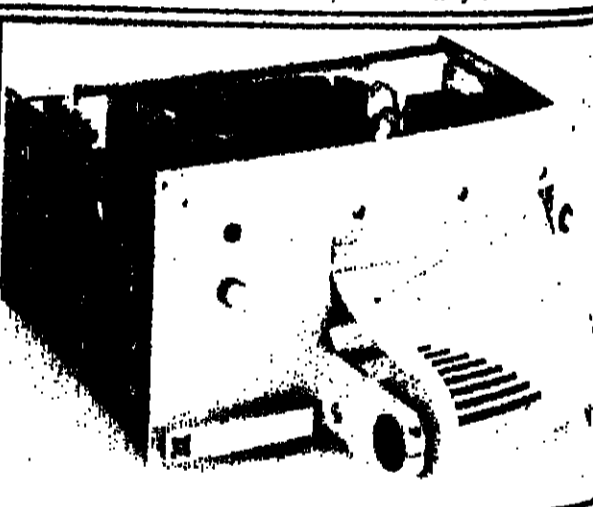
The factory-fitted option allows the Husky to capture analogue signals directly without the need for external equipment, and opens up new applications for the portable computer in areas where separate, bulky data acquisition and processing apparatus would have been required.

The portability and robustness of the Husky allow it to be taken directly to a measurement site, while the built-in memory capacity of up to 144 Kbytes means that large numbers of measurements can be stored with no need for cassettes or other storage media. The stored data are immediately

available for processing or using Husky's interpreter language.

A Husky with the analogue input facility can be used in a portable mode for instantaneous or can be left on duty measurements automatic pre-set intervals. A built-in clock allows the delay times which can be programmed by the user, after which the will return to a dormant conserve power.

The analogue/digital unit used in the Husky offers 8-bit resolution, and up to separate inputs can be set an internal multiplexer with in overvoltage and input protection. DVW Microelectronics, PO Box 135, 345 Folehill Coventry CV6 5RW.



The new silent, high speed thermal printer.

Innovation in printers

INDIVIDUAL components, or complete high speed, silent running thermal print systems designed to fit within and work off a wide range of electronic equipment is the latest innovation from Huntleigh Technology.

The printer reproduces alphanumeric characters, bar codes or graphics on thermal paper at speeds of up to 40mm (1 1/2 in) per second. The printers can be purchased as individual components for building into equipment or as complete units.

Manufactured by Electronic Systems of Westbury, the range of printers is produced to an advanced specification. Each printer has a line simultaneously and the print head is claimed to be maintenance-free, with a long operating life.

Huntleigh Technology, Components Division, Moor Road Industrial Estate, Cardiff CF2 2HB. Tel: 01-353 0777, ext. 368.

Recorder designed for personal computers

AN own-brand cassette recorder specifically designed for use with personal computers is now available from W. H. Smith.

Called the CPD-8300 Computer Program Data Recorder, the machine costs £39.95 and incorporates many features previously unavailable on cassette recorders.

It is said to operate reliably with any computer that loads and saves programs using standard microphone and earphone sockets.

The CPD-8300 can also be used for normal recording and playback of pre-recorded cassette tapes.

Tape transport controls are similar to conventional cassette recorders, and a three digit tape counter provides quick and easy location of individual programs when coupled with the cue/review facility.

The CPD-8300 also features an electronic pause which is designed to be overridden by computer control via the Remote Motor Control socket. This also allows operation of the cassette mechanism independently of the computer control without unplugging the Remote connection.

Another advantage over standard cassette recorders is that the Save and Load levels are adjustable and stabilised, and can both be controlled by the Level Set Control to eliminate problems often experienced when saving on cassette recorders with only automatic electronic level control.

In addition, there are two input Save sockets to ensure correct matching to computers with Save signals of different levels. The signal level display on the Level Indicator Meter is illuminated for easy viewing.

Other special features include Speaker Function Switch which allows independent speaker control in Off/On/Monitor/Save/Load modes and automatic prevention of Save and Load loops. This feature is particularly useful as it is necessary to disconnect the Save and Load leads. Indicator lights are provided showing Save and Load, motor on and power supply.

W. H. Smith (CW), 100 Colonnade Road N, Nepean, Ontario K2E 7M4. Tel: 01-353 0777, ext. 368.

PRODUCTS

Taking the headache out of sick pay

A SYSTEM able to calculate statutory sick pay at the rate of £50 to 90 seconds per employee, as opposed to the 20 to 30 minutes required manually, is the claim of AP Systems of Surbiton, Surrey.

Known as Seeplan SSP, the system does not require any setting up as it uses a critical reference number, not a database. This also means that it can handle as many transactions as a user wishes to put through.

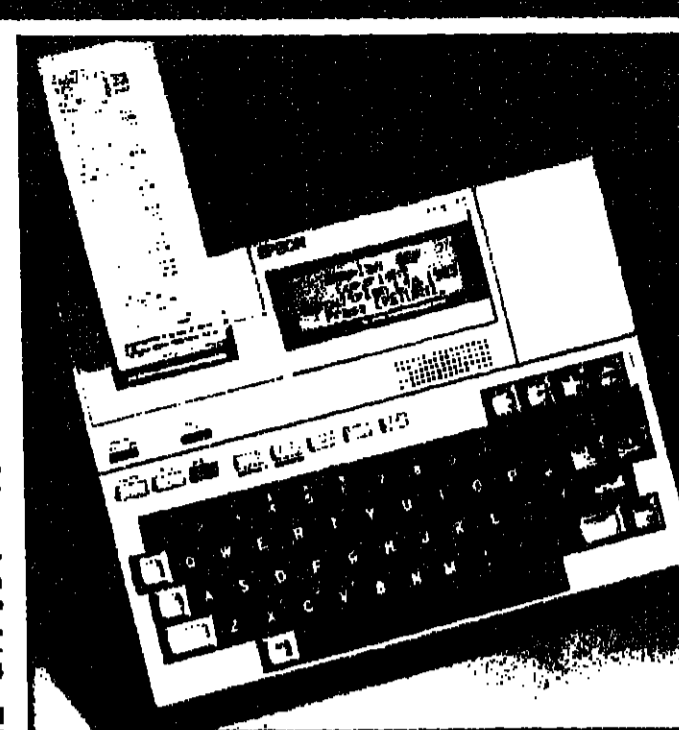
Seeplan SSP is supplied fully programmed and ready-to-use on an Epson HX-20 portable micro which has its own built-in printer, LCD, and full-sized keyboard contained within the size of an A4 notepad.

A suite of sophisticated programs handles the principal SSP problems. This removes the burden of SSP administration, and guards against expensive errors. In particular, the software enables the "sick pay machine", as it has been dubbed, to count and identify periods of incapacity for work (PIW's), pinpoint and handle waiting days, identify linked PIW's,

accept direct input of, or calculate, average weekly earnings, trace back to average weekly earnings at the beginning of the earliest-linked PIW, identify and handle unexhausted waiting days from a linked PIW, accept and handle contract

pay on a day-to-day basis and calculate daily contract pay if necessary, offset contract pay and SSP on a day-to-day basis.

AP Systems (CW), 90-100 Brighton Road, Surbiton, Surrey. Tel: 01-399 1257.



The Epson micro which will contain the SSP program.

400% savings claimed for drinks system

A MICROCOMPUTER-based beverage control system for hotels and restaurants has been introduced by Cara Consulting.

Developed by the food and beverage manager for one of London's largest hotels, it is designed to eliminate unnecessary administration and provide up-to-date information. The system is aimed at any hotel, restaurant, pub or club with at least two or three outlets.

Overall time savings have been shown to be over 400% and areas which were impractical to analyse manually, such as return of containers and precise costing of cocktails, can be checked by the computer to ensure that profitability is achieved and that actual and potential figures correlate, says Cara.

The master inventory records details of stock types, suppliers, cocktail menus and individual outlets. From this information a wide variety of management reports can be produced - for indi-

vidual bars, beverage consumption, stock levels and prices, cocktail mixtures, revenue etc.

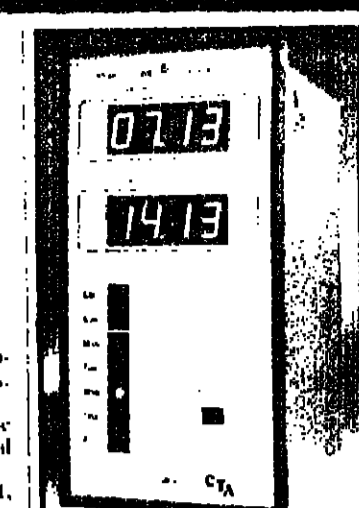
General enquiries can also be handled quickly via the visual display screen, says Cara.

Basic errors by new bar staff, such as using the wrong measure size, can be highlighted effectively via a precise computer report.

The special cocktail subsystem calculating the value and potential revenue of cocktails, individually lists each component, from spirits and mixers to slices of lemon and parafols. New cocktail recipes can therefore be developed, costed and adjusted with speed.

The system is protected by comprehensive security measures like audit trails, access authorisation and the ability to recover from power failure.

Cara Consulting Ltd (CW), Network House, 1 Ariel Way, Wood Lane, London W12 7SL. Tel: 01-743 2021.



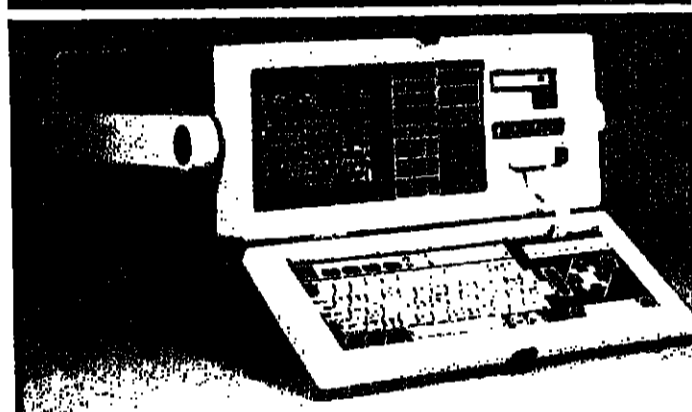
The real time clock

Clock-wise

TWO new versions of its panel mounting real time clock are introduced by Coutch Associates.

Three interface output specifications are now available: Multiplexed BCD 5V logic, high level 24V and the new RS232C serial format. The multiplexed outputs consist of four two character BCD numbers, representing minutes, hours, day and month.

Coutch Associates (CW), Oxted Mill, Spring Lane, Oxted, Surrey, RH8 9PB. Tel: 08833 5216.



The Interview 3600 from Atlantic Research.

Additions to Interview

THE Interview 3600 protocol analyser and selective data recorder and the interview 4600 protocol analyser and interactive test systems have been added to the Atlantic Research range of data communication test equipment.

Both products now have the X25 menu-driven capability. The user simply selects frame and packet type by name for analysis or for test message generation. In-depth, detailed bit-by-bit programming is also available for the engineering-oriented operator; but using the names is faster and more accurate when under pressure says Atlantic.

Tests retain the protocol language labels for fast review and easy comprehension by other operators.

Three other features included in the 4600 (optional for the 3600) to aid the user are remote transfer of

Powerful programmer

A MORE powerful version of the EP 48 EPROM programmer has been announced by GMT Electronic Systems. The new EP48X has a 16K internal memory as standard and can program Intel single chip microcomputers as well as EPROMs.

The EP48X is able, with fast programming algorithms, to achieve time savings for 8K and bigger EPROMs and can also provide alternate location programming for 16 bit applications.

The unit retains the same RS232 port for data input in Intel Intellec 8/MDS, Fairchild, Fairbug, Motorola Exoriser and Tektronix hex formats.

GMT Electronic Systems (CW), Newport House, 22, Hatfield Road, Wimbledon, London SW19 3TD. Tel: 01-497 7234.

Embossed graphics

FULLY embossed graphics is now being offered as part of its custom design service on membrane switches by Flexible Switch Technology.

The use of embossing on membrane panels offers advantages in providing a better finger location on buttons and hence an improved man-machine interface, and the new EST service follows investment in new production equipment and a new tooling process, says Flexible Switch Technology.

Embossing levels of between 50 and 500 microns are offered, and tooling costs vary from £50 to £400, depending on size and complexity.

Flexible Switch Technology, (CW), Unit 31, Middlefield Industrial Estate, Sunderland Road, Sandy, Beds. SG19 1RB. Tel: 0767 80332.

Increase your Sales this Christmas!

The scene is now set to make the first Your Computer Christmas Fair the biggest pre-Christmas promotional package for home computers and associated software.

No effort has been spared to ensure that every exhibitor has the opportunity to achieve record levels of business before Christmas (we've even arranged on-site storage facilities to help cash and carry purchases). A £50,000 publicity campaign using TV, Press, Radio and Posters is guaranteed to attract family shoppers throughout the country from

December 15 - 18. Organised by the computer market experts, Reed Exhibitions, and sponsored by 'Your Computer' magazine, Your Computer Christmas Fair will be the biggest and most successful show-

case for home computer products ever mounted. If you haven't yet booked into this Christmas bonanza, fill in the coupon below TODAY. Only a few prime sites now remain!

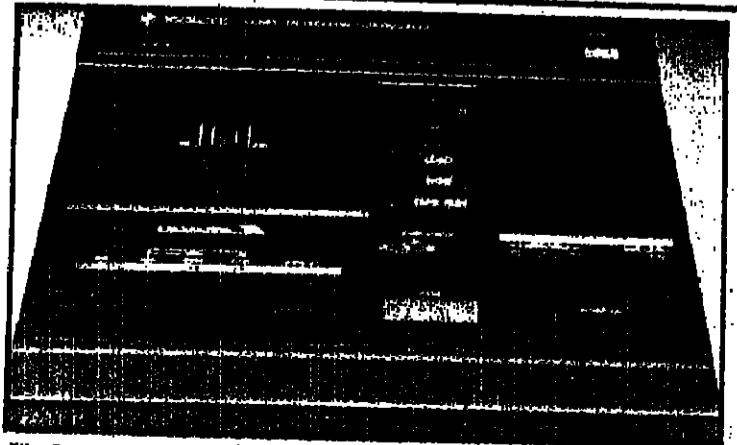
Return to The Exhibitions Manager, Reed Exhibitions, Surrey House, 1 Throwley Way, Sutton, Surrey SM1 4QQ.

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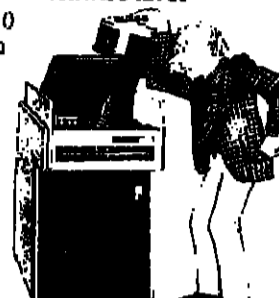
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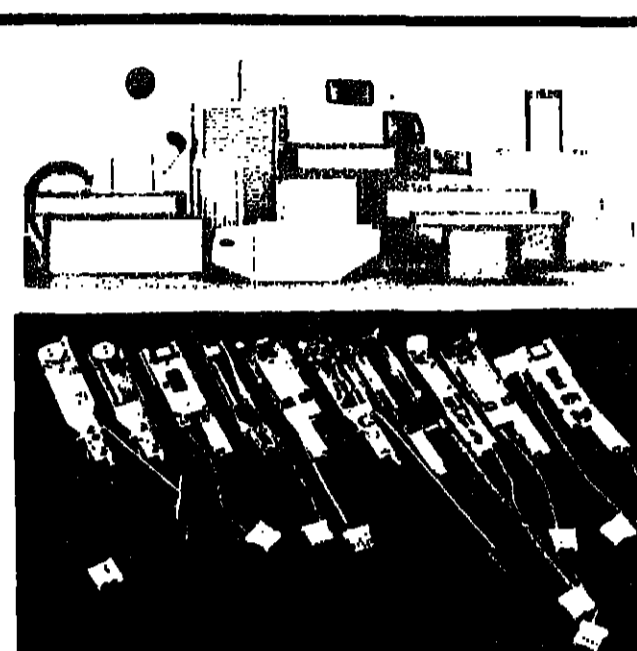
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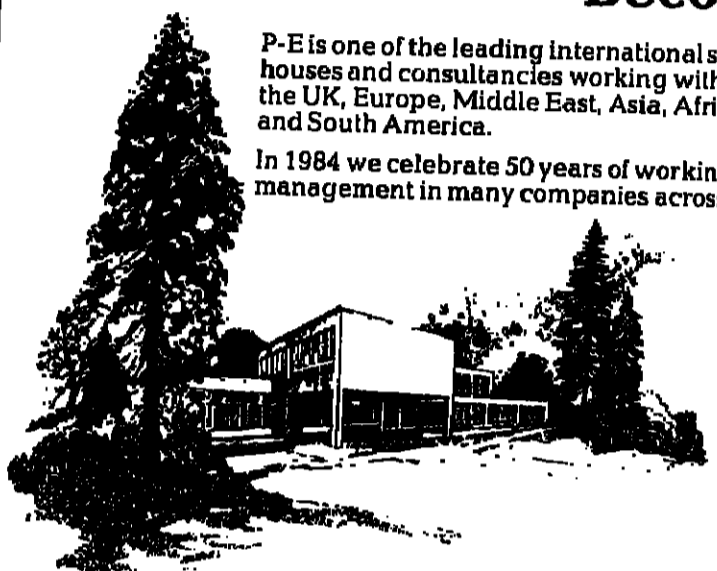
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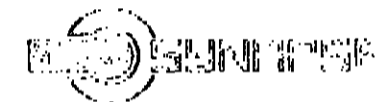
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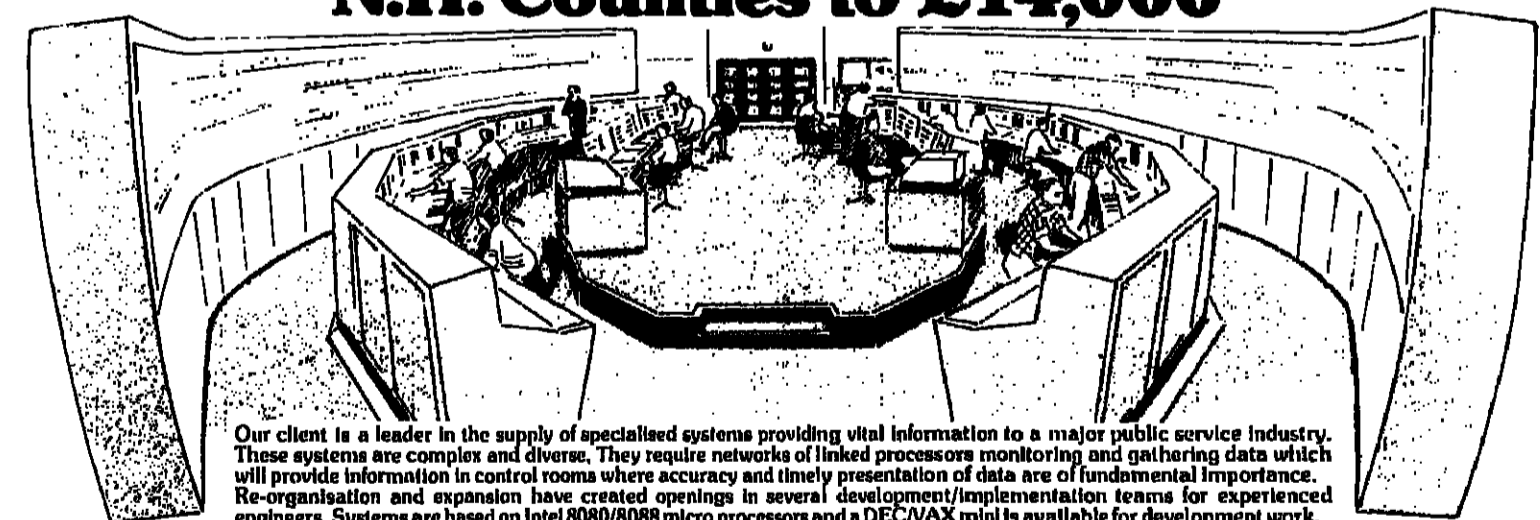
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Our client is a leader in the supply of specialised systems providing vital information to a major public service industry. These systems are complex and diverse. They require networks of linked processors monitoring and gathering data which will provide information in control rooms where accuracy and timely presentation of data are of fundamental importance. Re-organisation and expansion have created openings in several development/implementation teams for experienced engineers. Systems are based on Intel 8080/8088 micro processors and a DEC/VAX mini is available for development work.

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Candidates will be required to demonstrate at least 4 years experience in software design to include real-time systems, block-structured methodology and assembler orientated micro processor based projects. Knowledge of project control systems useful.

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Candidates will be required to work with a minimum of supervision on a variety of micro processor based developments either alone or with the assistance of a junior engineer. In-depth knowledge of the application of micro processors is essential and an interest in software is highly desirable.

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- RPG III
- COBOL

DEC

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Technical Writers

CICS/VS family of products - Hampshire

Do you want to write for a new job?

We're looking for several talented technical writers to join us at IBM United Kingdom Laboratories Limited at Hursley, near Winchester. We work in the information development department, designing and writing about the various programming and hardware products produced here in the laboratory.

Writing about CICS/VS

The CICS/VS writers get involved at all stages of book production: initial outline specification, draft stages, reviews, testing... all the way to the final copy that goes to the printer. A large part of the job entails gathering technical information both by using existing written sources and by talking to programmers and planners.

Can you meet the challenge?

You'll need both the ability to understand complex technical subjects and the knack of making them appear simple to your world-wide audience. If you already have some CICS/VS knowledge, that will help—as would VM experience. (Our word processing systems are based on VM.)

What are you doing now?

You're probably already writing for a living, but you could equally well be a programmer with a gift for words. Either way, we can offer you a competitive salary supported by a generous benefits package, including flexible working hours, a contributory pension scheme, and BUPA membership. Relocation assistance will be provided where appropriate.

So why not drop us a line? Ask for an application form from Mike Marlow, Personnel Officer, IBM United Kingdom Laboratories Limited, Hursley, Winchester, Hants. SO21 2JN. Please quote reference: CW/13/10.



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£9-£11,000 : LONDON

We are looking for two Communications Technologists to join our corporate communications team based in London. The first post has responsibility for the supervision of contractors involved in the installation of computing and communications equipment. The responsibilities of the second post include support of a complex international communication network and associated switching equipment.

Candidates must possess a minimum qualification of TEC Higher Certificate or equivalent.

Experience for the first post must include 6 years' computer engineering in a supervisory capacity with a good knowledge of communications. The second post requires 6 years' in-depth experience of all aspects of communications support in a complex network.

Starting salary including London allowance will be in the range of £9,000 - £11,000 per annum and benefits include an excellent non-contributory pension scheme, luncheon club and, where appropriate, assistance with relocation expenses.

Please write with full details of qualifications and experience, quoting ref. FY.102, to:

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Britannic House, Moor Lane, London EC2V 9BU.

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We are expanding and now need the following innovative, degree qualified professionals.

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We're looking for a number of accomplished engineers at various levels, with experience in one or more of the following areas:

- * Real-Time Software (ideally in a simulation environment)
- * PASCAL, CORAL 86, C, FORTRAN, MACRO 11 and ASSEMBLER languages
- * PDP11, VAX computers
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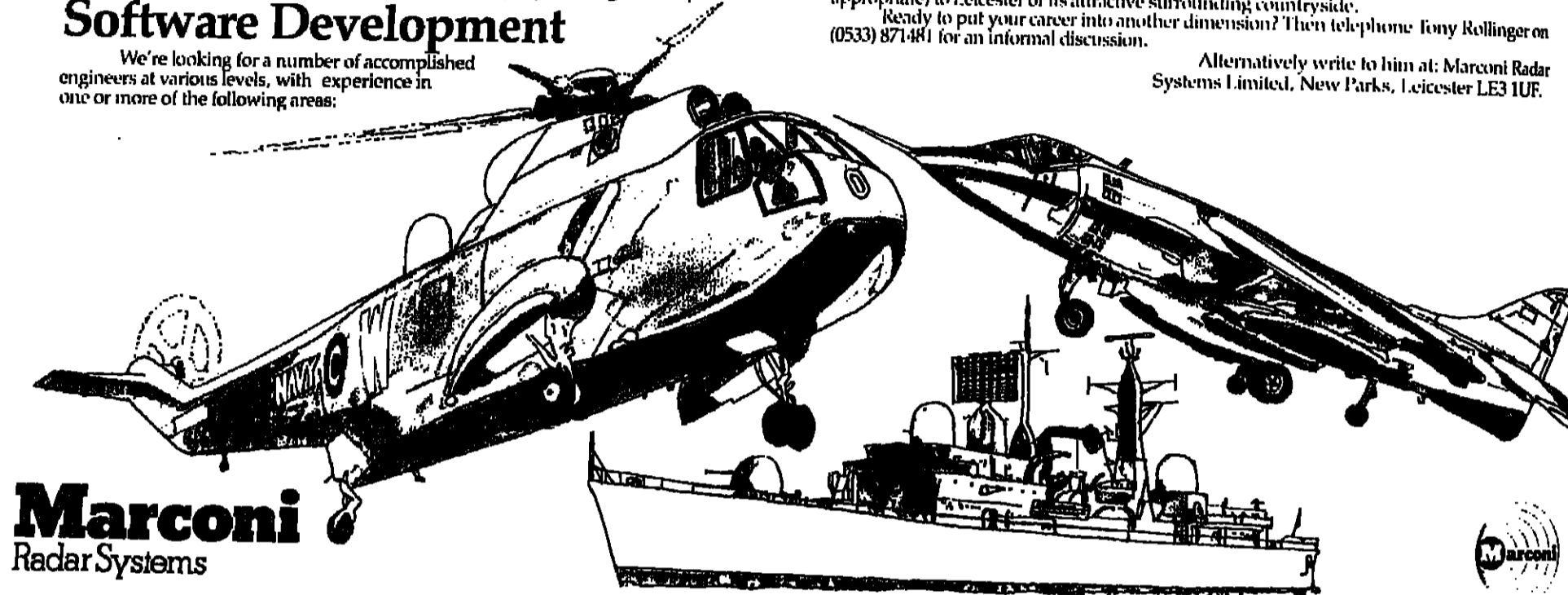
Applicants for Senior Engineering posts will need at least 5 years' experience, and ideally will possess project management skills.

Hardware Design & Development

We are seeking qualified electronics engineers, with several years' postgraduate experience, preferably gained on high speed data processing in a simulation environment, for digital hardware design involving Schottky TTL, ECL and microprocessor systems for CGL. Knowledge of computing is desirable, in particular familiarity with the PDP11 range of computers, or INTEL microprocessor systems.

Marconi offer competitive salaries - enhanced by generous relocation (where appropriate) to Leicester or its attractive surrounding countryside. Ready to put your career into another dimension? Then telephone Tony Rollinger on (0533) 871481 for an informal discussion.

Alternatively write to him at: Marconi Radar Systems Limited, New Parks, Leicester LE3 1UF.



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Our client is a computer services company within a well-known group, which is currently expanding to take on more development work. Group benefits include a good pension scheme and profit sharing/productivity bonus. They have a variety of hardware, which includes IBM GSD equipment, DEC (PDP-11 and VAX) and micro-computers. Experience gained in a commercial environment (accounting, payroll, personnel records) or manufacturing/production control, would be of particular interest. The systems to be developed will be both on-line and batch. In addition, you will be given the

IBM-GSD

- RPG II
- RPG III
- COBOL

opportunity to broaden your experience by implementing micro-based packages. As a senior programmer, you will already have had at least 3 years' programming experience including, ideally some supervisory experience, as you will be responsible for the technical supervision of programmers. An additional requirement will be the ability to communicate with non-technical users. Please contact Joan Alsworth on 01-681 8311 or write to her at Computer Search & Selection, 6th Floor, Carolyn House, Dingwall Road, Croydon, Surrey CR0 9XP.

DEC

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- VAX
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Management Control Systems is a successful AUTHORISED DIGITAL COMPUTER DISTRIBUTOR with a rapidly expanding £4 million a year turnover. We are based in Manchester and London with clients throughout the country.

We have vacancies for professional staff with several years' experience to work with PDP/RSTS and VAX/VMS on-line commercial systems. There is unique opportunity to become involved with a variety of interesting projects and clients. You will work mainly on MCS premises using our in-house computers and travel to our clients' sites for implementation and support.

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PROGRAMMERS

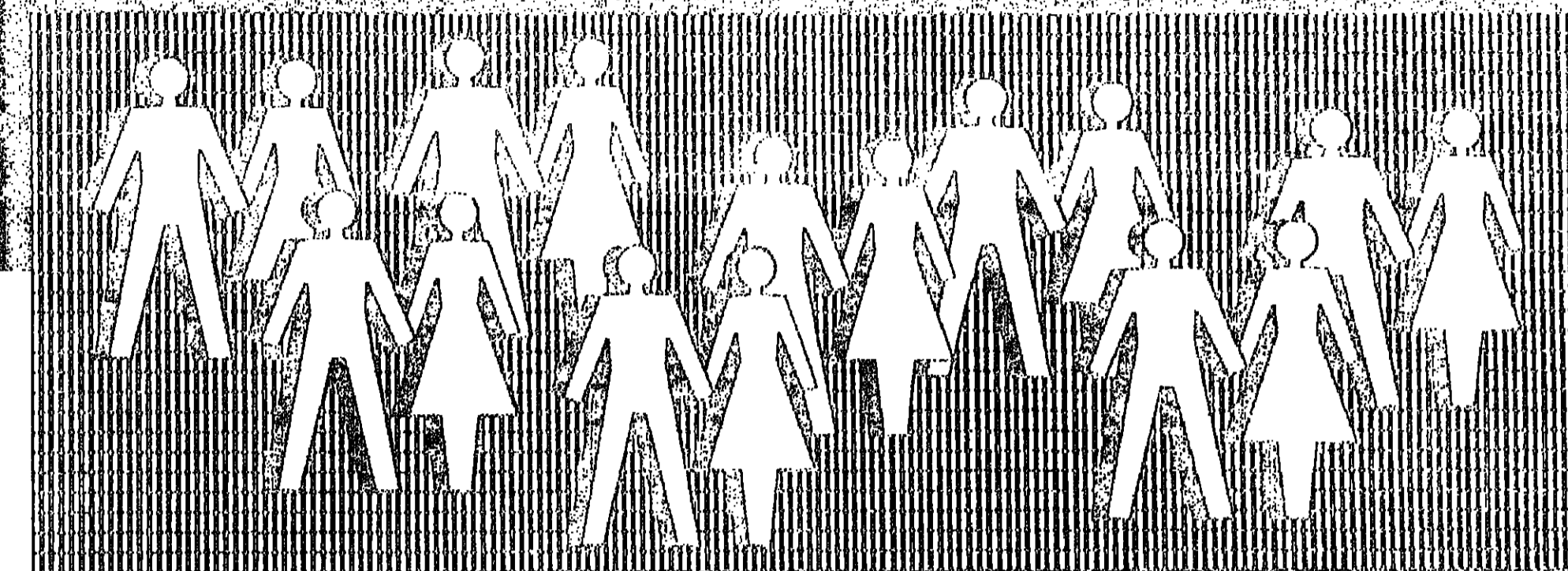
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Applicants to have at least one year's programming experience in development of on-line commercial applications using COBOL, DIBOL, RSTS/E with BASIC PLUS.

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64/66 Uxbridge Road
Ealing, London W5 2TJ
Tel: 01-840 3282
(reverse charges)

MANCHESTER
Fiona McKinnel
3 Wynnistay Grove
Fallowfield
Manchester M14 6XG
Tel: 061-248 7100
(reverse charges)

SEND IN THE CLONES?



It sometimes appears that as the defence area seeks an ever increasing number of computing specialists the skills and contribution of the individual can be lost in the rush to meet project demands.

As one of Europe's leading computing and consultancy organisations based in Hampshire, our client cannot settle for the average. Having established an impressive project record by constantly anticipating the changing priorities of defence computing and to enable them to continue their innovative role at the forefront of technology, they now need more talented individuals, not clones.

To enjoy the challenges of varied and demanding projects offered in an environment where your unique skills and contributions will certainly be recognised, you should have at least eight years experience in computing and proven experience in one of the following areas:

Service Operational Consultants

Operations experts throughout the defence areas are sought. Your services experience will have included extensive involvement in Command and Control, Air Defence or Ship Weapon Systems.

Familiarity with both current and next generation systems is essential.

Command and Control Consultants

The depth of your Command and Control knowledge, should enable you to make a significant contribution to our highly specialised team.

Electronic Warfare Consultant

An expert in your field, your extensive involvement in Electronic Warfare Systems will have encompassed Analysis/Design and Implementation.

Modelling and Simulation Consultants

Fully conversant with the software design of Modelling and Simulation Systems. Your defence background should have included experience of Algorithms and Fortran.

Designers/Implementors

Familiar with PDP11, VAX, HP or TI, your recent experience should have embraced some of the following areas: Air Traffic Control, Radar Data Processing, Flight DP Systems, Multi Sensor Systems, Tracking, Navigational/Sonar Systems, Algorithm Developments.

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CTR

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ANALYST/PROGRAMMERLONDON
TO £12,000

An international pharmaceutical company based in London are in the process of developing major new on-line systems. The current configuration comprises of an IBM 4341 running under VM/CMS, using CICS and DL/1, with proposals to implement new utilities such as MANTIS. They now require an Analyst/Programmer with a good COBOL background to assist in the implementation of the new systems. The ideal candidate should not have less than one year's COBOL programming experience with some exposure to an on-line and database environment, although for the right person, extensive training will be provided. This is one of the few major companies that offer a structured career path into an area of DP of your choice, i.e. pure analysis, or a more technical role such as systems programming. Company benefits include THREE SALARY REVIEWS a year; family BUPA and if you like GOOD FOOD, a FREE three-course lunch. Food for thought! If you're interested to learn more about this exciting opportunity, then call me, SIMON KONING.

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Telephone 01-283 9941 Telex 25851

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SENIOR PL/1 PROGRAMMERSFINANCIAL SECTOR
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Our client is a leading finance house and a member of a major Group. With systems development proceeding at a healthy rate they would still like to talk to Programmers with a solid (two-three years) background in PL/1. Also of interest are candidates from a large scale OS or MVS environment who have had some exposure to design and structured programming techniques for the development of on-line systems. In return for this kind of experience our company will provide ample scope for personal and career growth with talents and abilities being recognised and stretched. As far as the financial aspects of a future with this particular company are concerned, we believe it will be very difficult to improve or even match the package offered and are confident that successful candidates will enjoy a career that is rewarding in both senses of the word.

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LONDON AND HOME COUNTIES

£9-£16,000

Three of our clients have asked us to identify candidates to help them fill some urgent requirements within their existing DP departments. The first is a MULTINATIONAL ENGINEERING COMPANY that still retains a friendly but hard-working environment. The work falls into two phases and with a GENERAL COMMERCIAL APPLICATIONS background and some experience of ENGINEERING you will have the RIGHT experience. Development work is carried out on a PRIME with FORTRAN, BASIC, COBOL and INFO and other MINI experience would be useful. The positions are LONDON based and the salary range is £10,000 to £12,500. The second is a major ICL site, who have many openings. PROGRAMMERS are needed who can capitalise on their own personal skills preferably with VME 2900, VME/B experience. The work is both interesting and rewarding and depending on skills the salary range is between £8,500 and £16,000. Thirdly REALTIME SOFTWARE and HARDWARE ENGINEERS are required by a very successful manufacturer and systems house. ASSEMBLER skills or GRAPHICS experience with DEC or INTEL is of interest as is experience with PASCAL and C.

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We have an IBM Series/1 and several DEC PDP-11 computers used for on-line acquisition of clinical data, laboratory automation, medical research and statistical analysis. The main programming language used is Fortran.

Applicants (male or female) should have a good honours degree in Science, Mathematics or Engineering and five years of relevant postgraduate experience.

Salary scale is on the range of Senior Scientific Officer, £10,007-£12,646 inclusive of London weighting, depending on qualifications and experience.

Application forms from: Personnel Department, Westminster Hospital, Dean Ryle Street, Horseferry Road, London SW1P 2AP. Tel: 01-826 9811 ext 2101. If you wish to send a letter as well, supporting your application, please do so.

Further details about the post from Dr T. D. Preston, on 01-826 9811 ext 2528. (5816)

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Applications should be sent to Professor R. L. Grimshaw, The School of Engineering and Applied Sciences, The University of Sussex, Falmer, Brighton, Sussex, as soon as possible. (5937)

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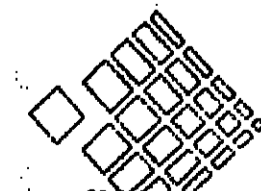
Contact Jackie or Lesley

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(M/F)Computer Disc
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Belgium

Our Client, a small production unit, is a subsidiary of a very successful international company which has retained its human dimension. Its activities are concentrated within a very sophisticated field of advanced technology. The amazing development of the market for this particular branch of technology has necessitated the immediate engagement of three young executives to be responsible for the supervision of the Quality Control, the Manufacturing and the Research & Development departments. They should have a good qualification in electronics and/or 2-3 years experience in the manufacture of memory discs. Alternatively, complete familiarity with Winchester technology would be ideal. These executive positions could be just the right stepping stone to a career in Technical Management for those motivated to succeed. This means candidates should be well qualified technically and have a very good knowledge of English. Knowledge of French and Dutch would also be appreciated. Ambition is the key word in these positions and accordingly our Client will only be looking at candidates with dynamic personalities. Who are capable of achieving results and who can be creative. The successful candidates will be closely associated with the management and development of a new project which will bring great professional satisfaction. The remuneration package is particularly interesting and future prospects are bright for those with ambition and who are willing to invest the appropriate effort for the future development of their career.

Should the requirements for these challenging positions match your personality and future career plan, please send us your application, including full details and two recent photographs, quoting the reference 10/24/75. A preliminary interview will then be arranged with the Consultant responsible for this brief. A reply will be sent to all applicants. The initial interviews will be held in Brussels, Paris and London.

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EXECUTIVE****£ Excellent & Car
DEC Experience**

Our clients, MBS Rentals, who are the UK's largest computer rental company, are seeking an experienced PDP11 and VAX Hardware Sales Executive, to work out of their Windsor Head Office. The successful applicant will be capable of specifying systems configurations and will have the initiative and ability to build a new unit in this exciting and expanding organisation. Rewards will include a good basic salary plus commission and a company car and career prospects for the right person are excellent.

To apply contact Gordon Crutchley

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Churchfield House, Churchfield Road,
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U100 + COBOL + DMS ± TIP
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To enable these systems to communicate effectively, Local and Wide Area Networks are being extensively utilised.

Applicants should have a relevant degree and a minimum of 2 years' development experience in any of the above areas.

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An outstanding opportunity for talented software professionals to research and design the communications software which will allow our client's advanced microcomputers to talk to IBM and ICL hardware using Local Area Network techniques.

Applicants should be qualified to degree level and have a minimum of 2 years' development experience in at least one of the following areas:

- Z80, 8086, 8088 microprocessors under CP/M, CP/M-86 or MSDOS
- Assembler
- Communications Protocols
- Systems Software

If your experience does not match any of these appointments, but you are considering a move, please call us—we may well have the right opportunity for your particular blend of skills and talent. Contact Edith Watson, Computer Search and Selection, Hamilton House, Marlowes, Hemel Hempstead, Herts HP1 1BB. Tel: HEMEL HEMPSTEAD (0442) 40761.

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With proven experience using ICL SYSTEM 10 and/or SYSTEM 25 in the development of clever solutions to complex problems.

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Evenings — 0480 891018 — ask for Alan Jephcote

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Our clients are part of a highly successful multi-national health care company. They require a professional ANALYST PROGRAMMER with around 18 months' experience to work on the development of commercial systems using an IBM S34 with RPGII and COBOL. An excellent benefits package including relocation and p.p.p. is available for the successful candidate.

SYSTEMS ANALYST

COVENTRY

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In return for your experience of the BASIC language, however limited, one of our clients in the Coventry area are looking for a Systems Analyst with a minimum of five years' D.P. experience in either Manufacturing or Financial Applications. They are seeking sound business analysis rather than technical systems experience. This is an up and growing company with a full order book.

ANALYST/PROGRAMMER

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c. £9,000

If you are an Analyst/Programmer with strong experience in a manufacturing user environment then here is your opportunity to move into an IBM GSD installation. Our clients are looking for someone with this applications background and will train the successful person in the RPG III language and the IBM utility MAAPICS.

SUPPORT ANALYST

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c. £9,000 + car

A leading OEM in the micro computer field is looking for a sales support analyst to take charge of their Midlands operation. Experience of the BASIC language is essential, and the preferred applicant will have worked for another manufacturer or dealer in a support role. Experience of the DEC range of hardware would be ideal.

ANALYST/PROGRAMMER

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c. £9,000

One of the leading service companies in the Birmingham area are looking for two analyst/programmers to supplement their D.P. department. Strong Analysis skills are required, as well as experience of the language BASIC. The hardware used is the DEC VAX system, though experience of this particular machine is not essential, as the company will train the successful applicant in the relevant software.

For any of these positions or other Midlands opportunities please call KEAVAN YOUNG in BIRMINGHAM as soon as possible.



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The position is ideally suited to a technically inclined manager with a strong interest in effective machine utilisation or a senior systems programmer wishing to expand current work horizons. Strong managerial qualities are emphasised, together with extensive experience in an MVS installation. A knowledge of CICS and VM/CMS would be additional strong recommendations.

In addition to the salary as indicated, the appointee will enjoy attractive benefits including mortgage subsidy, free BUPA, subsidised restaurant and season ticket loan.

To apply, please send a CV or write or telephone for an application form to JOHN KITCHEN, at the address below, quoting Ref. GW1182. (5971)

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Applicants should have exposure to DEC hardware and/or microprocessors plus some of: RSX11-M, VMS, MACRO-11, FORTRAN, CORAL, RTL/2.

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System exp. Essex

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Telex: 819472 STANAR G (60061)

SALES OPPORTUNITIES KUWAIT

Diyar United Trading & Contracting Company, one of Kuwait's fastest growing distributors of Prime and Calcomp systems, are seeking talented and ambitious sales executives for their Kuwait office.

The ideal candidates should have three to five years' sales experience and account management with at least two years' preferably on project management, draughting/graphics applications.

Responsibility will be to develop, maintain and achieve sales targets within a specific market.

Experience on Prime and Calcomp products would be a distinct advantage.

The company offers attractive basic salary related to experience plus generous commission structure. Also usual expatriate benefits will apply.

Interviews will be held in London. Please send completed C.V., telephone number, address, and if possible telex number.

du Diyar United Training & Cont.Co.

To:
Marketing Manager
Diyar United Trading & Contracting Company
P.O. Box 44240
Hawalli - Kuwait

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Sussex

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**Lloyd Chapman
Associates**
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people vs. paper...



We are looking for systems professionals to join our client - an internationally renowned "household name" company. The major requirement is simple, you must be people orientated and professional, technical and creative, and be prepared to recommend solutions which may not necessarily be DP orientated.

The environment is exciting and you must be capable of taking advantage of the freedom to use the technology of today, and tomorrow, to solve the complex business problems of the 1980's.

The core of the system is IBM 43XX's running under DOS/VSE (though the company will install VM quite soon); there is local networking using over 100 terminals with full colour graphics planned in major areas, whilst specific financial users are accessing the mainframe via micros. The main programming language is Cobol though some development will be undertaken in BASIC, FORTRAN or PASCAL. Applications are commercial, covering sales, distribution and finance, but your responsibilities will extend into Communications Networking, Voice response, Graphics, etc. and will mean total exposure to the tools of the industry.

Without doubt this must be the most exciting opportunity you are likely to find in the industry today.

So come and meet us and the Company's DP management on Wednesday 19th. We'll be at Cobden House from 4.30pm to 11.30pm and we will give you even more reasons to make what will be

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There's no paperwork for you to complete and no application forms - just people. So talk to us and see where your career is going.

Ring David Mason Johns at KPG or on 01-747-0988 (evenings or weekends) to confirm a time or come to Cobden House on Wednesday 19th.

Immediate vacancies exist for experienced staff who match the following profiles:

Senior Systems Analysts To £13,500

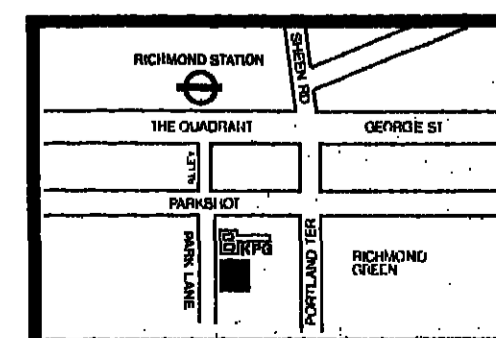
Aged around 30. 8 years' minimum DP experience with at least 4 years in analysis, and two to three years on CICS systems in a DOS/VSE environment.

Analyst Programmers To £12,500

Aged around 27. 6 years' minimum DP experience with around 4 years in a DOS/VSE, CICS, DL/1 environment.

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Aged around 25. 2/3 years in DP probably in Technical Operations Support. Will provide backup on all installed products in both mainframe and micro environments. Must have assisted in the installation of VM.



KPG
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KPG Computer Support Services Ltd.,
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Salary c£10,000 p.a.

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(5884)

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- aged 25 +
- degree qualified or equivalent
- experienced with Coral/Mascot in Systems Design

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ARCHIBOLD RAE CONSULTANTS LIMITED

(High Technology Search & Selection),

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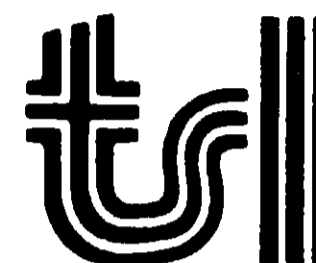
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ARc

(5887)

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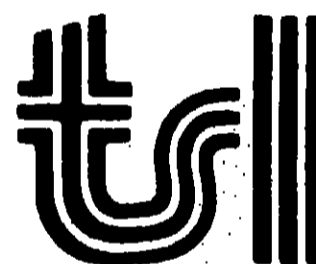
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01-837-0451

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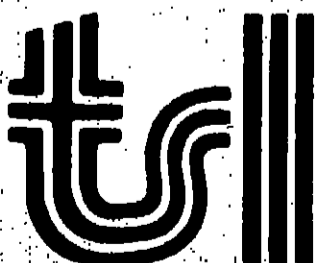
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01-837-0451

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(5928)

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ANALYST/PROGRAMMERS

For the other positions a minimum of 12 months' COBOL in a commercial or industrial environment is required. Experience of H.P. hardware, IMAGE and database projects would be beneficial.

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Please write or telephone David H. Barnes, Taunton Electronics Ltd, 78
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An American, multi-national metal packaging manufacturer with its European headquarters in Surrey seeks experienced data processing professionals to be based in the UK but who are willing to travel extensively in Europe. In return for flexibility and dedication, attractive salaries and benefits packages can be negotiated.

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If you are a self-starter, can work with a minimum of supervision and are skilled in systems planning, requirements definition, specification preparation, system development and documentation and would like to be considered for these positions please contact Mrs Suzanne Birch on

Bracknell (0344) 55777 (day) 24117 (evng)

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Please write for an application form or send a full cv to Clive Weston, Resourcing Development Manager at Plessey Marine Research Unit, Wilkinstroop House, Templecombe, Somerset BA8 0DH, or phone him on FREEPHONE 9622 (24 hour service). Please quote ref: TEM/235.

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The Project

The Smiths Industries Flight Management System effects optimum flight patterns, conserves fuel and time, determines aircraft position and provides the pilot with a full information nerve centre. Generally accepted as the most advanced in the world, it has been specified for several civil and military applications.

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Based on interlinked Intel 8086 series microprocessors, supported by state of the art memory technology, the system provides for the optimum management of the flight from take-off to final approach. Development is being carried out on PDP11 and VAX hardware using CORAL 66 and ASSEMBLER.

The Location

The Company is based near Cheltenham - attractive and accessible. A spa town and lively centre of music, art and sport lying at the foot of the Cotswold hills. Nearby are all the major West of England routes (M4, 5, 6 and 50) and railway connections are excellent.

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- Large company benefits
- Attractive 'green belt' Cheltenham location offering superb life-style.



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It is expected that successful candidates will offer degree-level qualifications and at least 2 years software engineering experience.

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Alternatively send him your c.v. addressed to: Computer People Midlands, Freepost, Alpha Tower, Birmingham B1 1BR.



Business Systems Analyst

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To take responsibility for the systems software environment across a distributed network of mini computers. Experience of Systems Administration, System Programming and Communication/Networking in an on-line transaction driven, mini or mainframe computer environment is required for this assignment.

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REF: DLJ 6753

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REF: DLJ 6717

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REF: DLS 6500

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REF: DLJ 6514

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REF: DLS 6683

DEC ANALYST & PROGRAMMERS CITY £14,000

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REF: DLM 6753

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You are young, experienced in CAD and have a strong engineering background with a bias towards software. Essential qualifications are the

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The salary offered is up to £13,000 plus an excellent benefits package, including life assurance, contributory pension scheme and relocation expenses where appropriate. If you are ready for a real challenge then phone Ian Muir, Personnel Officer, on Staines 51 388 or write to him at Newbury Data Recording Ltd., Hawthorne Road, The Causeway, Staines, Middlesex TW18 3BJ.

Newbury Data

A member of the DRI Group

South Downs 15 miles
New Forest 30 miles
Southampton 20 miles
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Chichester 17 miles
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—PORTSMOUTH—

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- ★ South Coast of England location
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dp

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"We look forward to hearing from you."

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(24 hour Ansaphone)

(6656)

Analyst/Programmer c £9,500

Programmer c £8,000

IBM S/38 and S/34

Hydron Europe Limited, one of Europe's largest manufacturers of contact lenses, require young and enthusiastic professionals to join a small expanding team developing systems on their S/38 and S/34.

Ideally applicants should have at least 2 years' sound RPG Programming experience working on IBM GSD systems. Experience of RPG III on S/38 would be a distinct advantage, however, full training would be given if necessary.

For the Senior Position applicants should also show an ability to communicate with D.P. staff and users in Farnborough and at our European sites.

Benefits include 4 weeks' holiday, private medical cover, life assurance and sick pay scheme.

Send c.v. to Lynne Green, Personnel Manager.

HYDRON EUROPE LTD
Hawley Lane, Farnborough, Hampshire. Tel: Farnborough 516151

COBOL SENIOR CHIEF PROGRAMMERS PROGRAMMERS PROGRAMMER

£8-£13,000

- ★ On-line Database projects
- ★ High Technology manufacturing and commercial applications
- ★ IMS DB/DC training available
- ★ IBM 3081 MVS

Our client, a member of a highly successful UK Group, is currently establishing a new Data Centre in PORTSMOUTH to provide systems development for a wide range of new on-line database projects. They are seeking to recruit programming staff with upwards of 18 months' COBOL gained in a main-frame environment. Opportunities are available at all levels up to Chief Programmer with training available in IMS on-line and batch techniques.

If you are interested in joining this challenging development environment, then write or telephone now for further information quoting reference WA131.

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24hr

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(Evenings until 10.00 p.m. 01-459 6646 or 01-451 1682)

Employment/Business Agency

Send your CV details now to Gwen Ventris or contact her for an application form at Texas Instruments Limited, Manton Lane, Bedford, MK41 7PA. Tel: 0234 674666.

هل انت من الاصل

هل انت من الاصل

Satellite Comms.

£10,500-£13,000

LONDON

Our client is the world's leading organisation for supplying electronic information to the media and financial community. They have one of the largest private communications network in the world which is about to be replaced. At this exciting development phase candidates with a minimum of two years' experience of programming in high level Real Time languages such as PASCAL or FORTRAN under the RMX/86 or VMS operating systems are required.

Data Communications

UP TO £16,000

LONDON

Our client is currently engaged in developing Software for the communications industry. They are seeking qualified Consultants with experience of communications standards and protocols, LANs and Office Automation. The company offers good salaries, good experience and an excellent career structure.

Communications

£8,000-£10,500

BEDFORDSHIRE

A systems engineer is required to work on the development of state-of-the-art communications systems products. This will include controller design, implementation, microcode, test software and systems software for high speed X25 and other network products. Applicants who hold a degree, with at least 2 years' experience of both hardware and software disciplines should apply.

Local Area Network Designer

£12,000-£16,000

HERTS

A leading manufacturer of terminals, modems and networks requires a Senior Engineer to join a small team defining a new generation of multiplexor products. The successful candidate will be responsible for the investigation, specification and design of local area network interfaces for new generation equipment. The position requires at least four years design experience in a high technology environment. Applicants should have experience of at least two of the following: data communications, LANs, 16-bit microprocessor based design, Assembler for real time applications, multiprocessor systems design.

DATAMATICS
RECRUITMENT SERVICES

01-399 9183

Datamatics, Freepost, Surbiton, Surrey KT6 5BR

Image Processing

£9,000-£10,000

NORTH LONDON

A highly respected manufacturer of image processing systems requires additional Software Engineers, to work on digital processing systems. You should have had at least one year postgraduate industrial experience and have programmed in Assembler during this period. Creative flair, committed interest and the willingness to succeed will result in period. Extensive opportunities for career advancement.

Process Control

£11,000-£17,000

LONDON

The Industrial Group of a leading Software Company seek Consultants and Designers to develop process control software for the food, drink and drug industries. Candidates, dependent on level of experience will be offered a number of positions such as supervising projects, developing software on large projects, assisting sales teams in a technical support role and producing specifications.

Modems Design

£10,000-£15,000

HERTS

An engineer is required by a leading equipment manufacturer. Our client is ideally situated north of London, well served by rail and road. You will develop new microprocessor-based modems and local area network products and be expected to take a product from conception to production. A degree is highly desirable whilst at least two to three years' design experience with microprocessor-based logic systems is essential.

Graphics/Cad

To £11,000

WEST COUNTRY

A London-based Systems House is currently seeking scientific programmers to work on site in the West Country for a minimum of two years. Candidates should have experience of Fortran on VAX machines and an interest in graphics-type applications. In addition, programmers with Coral are required for engineering systems.

DATAMATICS
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CONTRACTORS

IBM

IBM SYSTEM 38 RPG 3 MAAPICS ANALYST PROGRAMMERS
IBM 4341 DOS/VSE COBOL CICS PROGRAMMERS
IBM MVS COBOL IMS DB/DC SYSTEMS PROGRAMMERS
IBM MVS TSO FORTRAN PROGRAMMERS PROGRAMMERS/ANALYSTS
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IBM IMS DB/DC JSP PL/1 PROGRAMMERS
IBM IMS DATA BASE DESIGNERS
IBM MVS SYSTEMS PROGRAMMERS
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IBM SYSTEM 34 RPG 2 MAAPICS CONSULTANTS
IBM DOS/VSE REAL
TIME EXPERIENCE ANALYSTS
IBM DOS/VSE COBOL & ASSEMBLER ANALYST PROGRAMMERS

ICL

ICL 2900 IMS VME TPMS COBOL PROGRAMMERS
ICL 2900 IMS TPMS ALL LEVELS
ICL SYSTEM 26 COBOL IAS ASSEMBLER PROGRAMMERS
ICL 2900 VME IMS COBOL ANALYST/PROGRAMMERS
ICL 2900 VME TPMS COBOL ANALYST/PROGRAMMERS
ICL 2900 VME TPMS COBOL ANALYST/PROGRAMMERS
ICL IMS DATABASE DESIGNERS
ICL ME 20 RANGE COBOL PROGRAMMERS
ICL DRS 20 CIS COBOL PROGRAMMERS

OTHERS

HP 3000 COBOL PROGRAMMERS
MOTOROLA 68000 PASCAL PROCESS CONTROL/COMMS SOFTWARE ENGINEER
PRIME TOTAL COBOL PROGRAMMERS
ANY MACHINE TOTAL COBOL PROGRAMMERS
MOTOROLA 6800 ASSEMBLER SOFTWARE ENGINEER
MOTOROLA 6800 UNIX C OR PASCAL ETC. SOFTWARE ENGINEER
MOTOROLA 6800 TTL CMOS ANALOGUE, EXPERIENCE HARDWARE ENGINEER
HONEYWELL 66 DM4 IDS/TPS COBOL ANALYST/PROGRAMMERS
UNIVAC 1100 FORTRAN PROGRAMMERS
UNIVAC 1100 JACKSON COBOL PROGRAMMERS
DATA GENERAL C360 M6800 MV 8000 ADS/INFOS ANALYST/PROGRAMMERS
HP 3000 COBOL IMAGE VIEW PROGRAMMERS
INTEL ASSEMBLER REAL TIME DESIGN ANALYST/PROGRAMMERS
PDP 11/23 RT11 C PROGRAMMERS
VAX VMS ANALYST PROGRAMMER
PERKIN ELMER COBOL PROGRAMMERS
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VAX VMS COBOL PROGRAMMERS
PRIME PRIMOS 41- FORMS MIDAS PROGRAMMERS
HONEYWELL L6 CGOS SCREENWRITE (EUROPE) PROGRAMMER/ANALYSTS
PDP 11/23 RT11 C PROGRAMMERS
VAX COBOL PROGRAMMERS
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ANY MINI + 18 MONTHS + CIS COBOL PROGRAMMERS

URGENT

ANYBODY WHO HAS EXPERIENCE OF 'C' URGENTLY REQUIRED.
CORAL 66 AND/OR GEC 4000 AND/OR REAL TIME HIGH LEVEL LANGUAGE
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Computer Search & Selection

PROGRAMMERS /ANALYST PROGRAMMERS SYSTEMS 34 & 38

City of London to £12,000

With System 34's in Europe, Australia and the Far East and a System 34 and a 38 in London, this international money broker is fully committed to GSD technology. To ensure that in-house systems continue to provide the level of support that this fast-moving industry demands, they now need two experienced programmer/analysts.

You will join a small team responsible for the continued enhancement of existing systems as well as the further development of multi-currency, multi-company, financial and management information systems. Subsequent to development these will be implemented in the overseas offices and some travel may be necessary.

Applicants should have had either 18 months RPG III experience or a thorough grounding on the System 34 with some exposure to the 38. You should have worked within a sales orientated environment handling both bespoke development and package implementation. Bright, presentable, enthusiastic candidates can expect a salary of up to £12,000 with a non-contributory pension scheme and other benefits.

If you can rise to the challenge of working in this stimulating environment ring David Mason Johns at KPG now or on 01-747 0969 during the evening or at weekends. Please quote Ref 8229/CW.

KPG
01-948 5922

KPG Computer Support
Services Limited
Cobden House, Park Lane,
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EMPAGY

Our client, a progressive, friendly, dynamic company in the heart of Sussex, require two professionals:-

ANALYST 'C' PROGRAMMER £8-£11k
(IMAGE PROCESSING)

3-4 years' experience in a scientific environment with application/system involvement. A working knowledge of 'C' language and the Unix operating system is essential for new hi-tech projects.

PROJECT ENGINEER £10k
(INDUSTRIAL CONTROL)

To handle process/machine control projects for a large and very diverse range of customers mainly in the UK. Ideally an Electronics Engineer with good software experience. A knowledge of Assembler and a high level language preferable.

These positions offer an excellent opportunity to join a highly motivated and talented team. For further details and an early interview telephone Tim Knight or David Bohanna on

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(9am-8pm)

or write enclosing CV to:

ATA Recruitment

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24 hour answering service

ata

Software Development Engineer

With total project involvement

Norprint — Europe's leading specialist manufacturer of labels and labelling systems — are fast developing 'state of the art' label manufacturing technology with the introduction of microprocessor and digital controlled systems.

We are currently seeking a Software Development Specialist to join a small but highly professional team, responsible for the specification, design and development of Software.

The man or woman appointed will play a significant role in the future development of the company's range of products and will have total involvement in project management from initial design right through to final commissioning.

Additional duties will include close liaison with suppliers, customers and our own sales teams in order to customise systems to a range of specifications.

Applicants should possess a Degree or HND/HNC and have previous experience of ASSEMBLER level Software — PASCAL and digital communications experience would also be very useful.

An attractive salary and benefits package is offered including generous assistance with relocation, contributory pension, free life assurance and medical benefit scheme.

Regional interviews will be arranged for successful candidates.

Please telephone or write giving details of career to date to John Kennedy, Personnel Services Manager, Norprint International Limited, Homecastle Road, BOSTON, Lincs. PE21 9JZ. Tel: Boston (0205) 86181.

The largest manufacturer of labels and labelling systems in Europe



Navigation Systems

To £16,000

SURREY

One of Britain's leading information systems contractors is seeking a consultant to work on Navigational Systems in marine and aircraft systems. Ideally the successful candidate will have a numerate degree plus five years' experience in the design and assessment of digital systems for inertial navigation, integrated navigation, radio and satellite.

Communications

Up to £18,000

CENTRAL LONDON

One of the most advanced Systems Houses in England is seeking highly experienced Senior Staff for the very specialised area of Military Communications. Ideally future Technical Consultants will have at least four years' experience in communications or C3 environments. Systems cover ranging from radio links, radar systems to fully automated switch systems, local area networks etc.

Sonar Systems

£9,000-£14,000

SOUTH OF MANCHESTER

Our clients are a major manufacturer of defence systems and are currently seeking military applications. They are a creative force in defence and are currently looking for new innovations in real time computer systems and are currently under development a variety of future generation sonar, electronic countermeasures and anti-air warfare systems. Software specialists and Software Engineers with a degree in a relevant subject, Maths or Physics and significant experience in real time computer systems are required.

HERTS/BEES

A computer manufacturer requires experienced software engineers to develop communications software products. The successful candidate should have been in communications software development for at least two years.

DATAMATICS
RECRUITMENT SERVICES

01-399 9183

Datamatics, Freepost, Surbiton, Surrey KT6 5BR

Software Research

£NEC

WEST COUNTRY

One of the world's most innovative producers of Microprocessor-based Signalling and Control Systems requires Software Professionals to develop Failed Safe Software. Successful candidates should have a degree plus a minimum of 2 years' Real Time Software, while Hardware appreciation would be helpful.

Electronic Systems

£NEC

WEST COUNTRY

Our client requires software programmers with experience of Real Time systems and design analysis. Main equipment includes H.P. 1000 systems, Model RT6, Migros, Intel and Texas. Candidates should be familiar with structured high level languages such as CORAL 66 and/or PASCAL.

Military Applications

Up to £15,000

LONDON

A top defence contractor requires a professional with the MSc degree Professional Engineer and experience in developing Real Time Defence Systems. Candidates should have a degree plus 3 years' experience of CORAL and preferably MASCOT. Experience of CORAL and experience in the development of defence systems are essential. The successful candidate will be responsible for the design and development of defence systems.

A to Z of Software Development

With a proven track record of skills and application across the full range of software development, our clients are present:

• Assembly, Machine Code, Circuit Board Code
• Systems Software, Operating Systems, Database Design, PC/XT
• Systems Software, Operating Systems, Database Design, PC/XT
• Systems Software, Operating Systems, Database Design, PC/XT
• Systems Software, Operating Systems, Database Design, PC/XT

DATAMATICS
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Datamatics, Freepost, Surbiton, Surrey KT6 5BR

Consultants, Systems Engineers, Software Engineers, Programmers

Salaries: £8000-£18000 with all usual benefits

Founded in the late sixties Systems Designers Limited is established as one of the leading system consultancies achieving a unique reputation with its policy of high quality products for real-time, mini and micro computer based systems

To maintain a steady controlled rate of growth and meet the increasing demands of industry SDI are seeking experienced software professionals to contribute to and share in the success of a dynamic and forward looking company

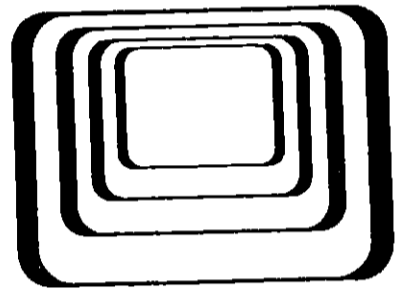
Current requirements are for Programmers, Software Engineers, System Engineers and Consultants with experience of real-time systems based on mini and microcomputers and a knowledge of high and low level languages Experience of some of the following would be of particular interest:

- Internal system structure of UNIX applications
- Software and hardware for digital image processing
- Tactical communications (SATCOM, VHF, HF) applications
- Videotex, financial and banking or telecommunications
- Fault tolerant systems or advanced graphics
- In-depth compiler design and construction.

If you have a degree or equivalent and at least two years relevant experience we would welcome a call on Freephone 3179 or if you prefer write to Pamela Hayes-Jones.

Systems Designers Limited
Systems House, 105 Fleet Road, Fleet, Hampshire GU13 8NZ

Systems Designers

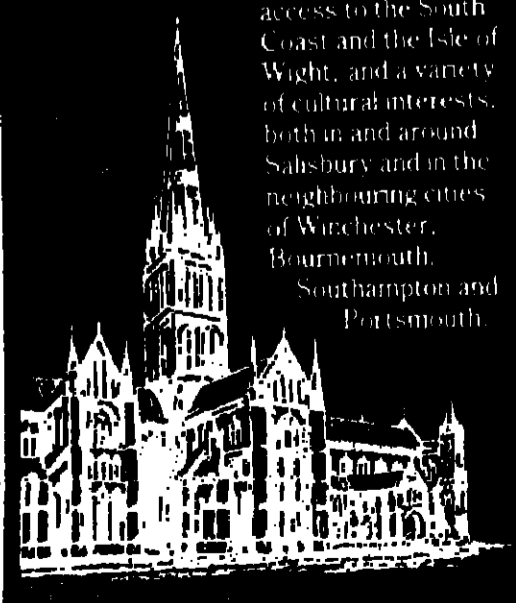


Make your next career move the one that counts.

Salisbury

This delightful cathedral city is situated in Wiltshire, close to the Hampshire border and the edge of the New Forest.

Salisbury offers not only a rewarding career at UK Provident's Head Office, but also an attractive lifestyle - glorious countryside, easy access to the South Coast and the Isle of Wight, and a variety of cultural interests, both in and around Salisbury and in the neighbouring cities of Winchester, Bournemouth, Southampton and Portsmouth.



Success breeds success...

...especially where careers are concerned. Which is a good reason for harnessing your career to the kind of success we're achieving at UK Provident

We are one of Britain's leading Life Assurance Offices, with branches in every major city. Our growth in recent years has been dynamic, premium income rose from £91m in 1981 to £142m in 1982, and achievements this year are already well ahead of our target.

We need to support the momentum produced by our sales staff by expanding our data processing services including our TP network and IDMS database. This means that there are now challenging opportunities for a variety of data processing staff to give free rein to their skills. Experience in the financial sector (preferably in Life Assurance) is desirable.

If you are interested, please telephone for an application form or write (giving full career details) to:

Paul Ambrose, Assistant Manager
(Recruitment and Personnel Administration)
UK Provident, United Kingdom House
Castle Street, Salisbury SP1 3SH
Telephone: (0722) 336242

Project Leaders c. £12000-£13000+ benefits

One to be responsible for leading a team of senior analysts and programming staff on mainly development projects in a fast changing financial environment. Another to lead a team engaged in all aspects of Acceptance Testing in order to ensure the smooth introduction of both new and enhanced systems.

Senior Systems Analyst c. £11000-£12000+ benefits

To be second-in-command of the Acceptance Testing team. A knowledge of system testing is essential.

Technical Support Programmer c. £9250-£10250+ benefits

To assist in the generation and maintenance of proprietary and internally developed software. Several years experience of ICL hardware is required, together with three of the following: VME 2800 or VME/B, IDMS, TPMS, DDS and SCL writing.



Success you can share

MANAGEMENT & EXECUTIVE SELECTION

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you have just struck GOLD

PRODUCT MANAGER

Graphic Displays c.£22,000+ car
This is an ideal opportunity for someone with several years' experience of selling sophisticated graphic display systems to now assume responsibility for developing the UK sales of an advanced new range of Raster Scan Displays plus an established line of Vector Refresh Systems. Both product lines are particularly suited for use in CAD/CAM, simulation and 'C' etc. The successful applicant will, therefore, have a thorough appreciation of the different graphic display technologies and will be familiar with selling in multi-vendor environments to Government Departments and Institutions as well as to end users in industry. In addition to normal day-to-day selling activities the job will involve identifying and quantifying new market areas, reporting back on desirable product developments, agreeing pricing strategies and liaising on hardware and software support requirements.

Please apply now to Mike Reynolds on 01-637 9611

SALES ENGINEERS

Graphics Peripherals £18,20,000+ car
A number of exciting openings have recently been created for experienced Sales Engineers to take over some existing accounts and to develop new sales activity in various parts of the UK. Generally working from home, successful applicants (male/female) will be responsible for the initial product training, for selling CALCOMP's wide range of dot-matrix and flatbed pen-plotters, electrostatic plotter/printers, controllers and digitizers, mainly into scientific, engineering and technical computer applications areas. You should therefore have a proven track record in selling computers, peripherals and software, and preferably, also, in the field of scientific and engineering applications. With a competitive salary and a generous commission structure, this is a most desirable, but by no means essential, qualification.

SALES SUPPORT ENGINEER

£10,000+ car
This is an ideal opportunity for someone with several years' experience of selling sophisticated graphic display systems to now assume responsibility for developing the UK sales of an advanced new range of Raster Scan Displays plus an established line of Vector Refresh Systems. Both product lines are particularly suited for use in CAD/CAM, simulation and 'C' etc. The successful applicant will, therefore, have a thorough appreciation of the different graphic display technologies and will be familiar with selling in multi-vendor environments to Government Departments and Institutions as well as to end users in industry. In addition to normal day-to-day selling activities the job will involve identifying and quantifying new market areas, reporting back on desirable product developments, agreeing pricing strategies and liaising on hardware and software support requirements.

SOFTWARE DEVELOPMENT ENGINEERS

to £14K

PERFORMANCE ENGINEER

to £14K

TECHNICAL AUTHORS

to £12K

PRIME

For further information please contact Karen Whelan, 01-637 9611

Suite 201/6 Albany House 324 Regent Street London W1R 5AA 01-637 9611

Prime Computer R & D is a successful organisation dedicated to the development of new software products.

The initiation of new projects and expansion of current tasks calls for the recruitment of proven professionals to work at our pleasant and spacious Bedford office.

We need people with experience in networking, transaction processing monitors, operating systems and performance analysis.

If you have four to ten years' experience in systems software development, have contributed to the implementation of one major project using a high level structured language, we may have a role for you. You could work on a range of products both new and established. There is wide scope for individuals to take responsibility and to progress rapidly in either technical or managerial areas.

We are looking for a systems engineer with an interest in the metering and investigation of systems software performance. Applicants should have experience of complex software systems and their architecture.

We need technical authors to work on the documentation of systems software products developed at Bedford. Ideally candidates should have experience in documenting such systems.

MANAGEMENT & EXECUTIVE SELECTION

(5896)

Analyst/Programmer
London + Overseas Travel £10-£12.5K
 Personal attributes and a minimum of 18 months' real-time experience are of prime importance to join a team involved in the development and support of software products for the UK and European insurance markets. Potential exists to move into a specialist technical role. Ref: 0809/A

Assembler Programmer
Herts c.£8.5K
 An innovative British company developing POS systems has a fascinating opportunity for a programmer with two to three years' assembler programming experience. Work will be on applications ranging from POS, Stock Control, Accounts and Payroll to Operating Systems. Good colleagues and excellent working conditions. Ref: 0809/B

IBM Programmer
City Up to £12K
 A large banking organisation that provides excellent staff benefits including interactive development facilities (one terminal for each programmer) and training plans to introduce major new systems. Experience of COBOL, CICS and DL1 after a good educational background is the key to your participation. Ref: 0809/C

Electronics and Software Engineers
Herts, Beds, Surrey £10-£13K
 Opportunities exist with several of our clients to work on both defence and civil real-time systems where the need is for hardware and/or software skills with microprocessors and device drivers. Excellent promotion prospects with expanding companies who are able to offer relocation if needed. Ref: 0809/D

Programmers/Team Leaders
South Coast £8-£16K
 Our Systems House client is expanding fast and excellent career prospects are available to programmers with two to seven years' experience of defence and allied work. CORAL, PASCAL or FORTRAN skills are needed. New offices are being established in Southampton and staff will work there and on nearby client sites. Ref: 0809/E



Isobel Bruce or David Fitcher 01-405 1006 or write quoting advertisement reference number, 16 Red Lion Square London WC1R 4QS

Batchelors is in the middle of an extensive programme of introducing on-line systems across three sites, through a network of IBM 4300s operating under DOS/VSE. The following are currently required to fulfil key roles in the current high development environment at our Head Office in Sheffield.

DATA BASE ADMINISTRATOR

c. £13,000 according to experience

In this central management role you will be expected to design DL1 data bases which give good performance whilst still satisfying the business requirements. Maintenance and support of these data bases will develop with increasing user contact into an Information Centre approach, thus calling for a greater range of skills beyond purely technical ones.

To meet the challenge of this position you will need to have had seven years' experience in an IBM DOS/VSE environment, a substantial part of which must include DL1. A good data base design background is essential and knowledge of IBM's data dictionary would be an advantage.

This is a Unilever Management appointment, offering excellent benefits and conditions of service, including relocation expenses where appropriate.

DESIGNER/PROGRAMMER

c. £7,800 according to experience

This is an excellent opportunity for an experienced designer/programmer with a sound knowledge of CICS/DL1 and COBOL to develop skills within our busy development team. You will assist in the specification and design of systems/data bases, fulfilling an essential role between the business and technical functions in the Business Systems Department.

Three to four years' programming/design experience is required, and experience of working in an application team environment and knowledge of UFO would be an advantage. We offer excellent benefits and conditions of service, including flexible working hours and 25 days' annual holiday.

Please write giving brief details of your experience to date to:

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 Staff Officer.

Batchelors Foods Limited,
 Wadley Bridge,
 Sheffield S6 1NG.

Batchelors
 for good food

Computer Professionals

Viewdata Systems Micro Programmers
Herts + Overseas possibilities £9K+
 Our client is developing viewdata systems and communications links for these and other applications using X25 protocols. Knowledge of X25 and M68000 assembler advantageous but other relevant experience will be considered. Graduates with two years' programming experience preferred. Ref: 0809/F

Software Development
Surrey £10,000-£12,000
 This is a specialised role involving the design, development and implementation of software for diagnostic and test purposes. Candidates must be familiar with DEC PDP 11/RSX 11 and ideally have had experience of working at hardware interface level. Knowledge of PASCAL or FORTRAN would be an added advantage. Ref: 0809/G

Programmers (Comms. Software)
Middx £10,000-£14,000
 This systems house specialises in transaction processing technology and has designed and installed a number of sophisticated switched networks, mainly in the financial sector. Vacancies now exist for high-calibre programmers with sound COBOL, ASSEMBLER or PASCAL experience and full training will be provided on TANDEM COBOL/TAL. Ref: 0809/H

Real-Time Expertise
Surrey Border £9,000-£17,000
 High technology systems house needs designers and consultants to be involved in the development and installation of defence, information and industrial real-time applications. Familiarity with Assembler or Real-Time/mathematical languages is desirable. Substantial remuneration package and relocation offered. Ref: 0809/I

Analyst/Programmers
London Up to £10,000
 A minimum of 12 months' on-line programming experience is required for two bright and enthusiastic programmers to join a small dynamic team involved in the development and support of leasing systems for the UK and European markets. First-class remuneration package and career prospects. Ref: 0809/K

Communications Programmers
London £10,500-£13,000
 A very prestigious and profitable organisation is currently replacing its communications network. As a result opportunities of rare scope exist for programmers with at least 12 months' experience of PL/M or PASCAL/RTL 2 to join small highly skilled teams developing new communications facilities and databases. Ref: 0809/L

Scientific Consultancy
London Up to £15,000
 A leading UK consultancy requires additional high quality, professional staff at varying levels. Candidates must be graduates and have experience in one of the following areas: Digital Electronics, Simulator Design, Navigational Systems, Avionics or Acoustics. Excellent career prospects in a growing organisation. Ref: 0809/M

Mathematicians
North London £13K
 Mathematicians are needed with experience of target acquisition, trajectory modelling and simulation to join teams working on the early stages of a major new weapon system project. Good degree essential. Relocation assistance will be provided if needed for candidates to join this company which offers outstanding career prospects. Ref: 0809/N

Analyst Programmers
London/Overseas Up to £12.5K
 Rapidly expanding systems house with worldwide client base needs Hewlett Packard experts. Specification and implementation can be overseas but development in London on the in-house machine. Five years' experience, the last two on HP 3000, using IMAGE, QUICK, QUIZ etc is needed for these positions. Ref: 0809/P

(6883)

Recruitment Consultants Licence No. SE 0788

Fed up with the commuting rat race?

Work in Windsor

Our client, world leading manufacturers of micro-based office automation and word processing equipment, wish to expand their development team during the evolution of an exciting new range of products.

Successful applicants are likely to be aged between 25 and 35 with a minimum of two years' relevant experience.

The company's Systems Division, which is responsible for applications and communications programming for a world-wide market, situated in the pleasant surrounds of Windsor, offers excellent working conditions in an informal yet highly professional team environment.

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Due to the increasing number of development projects, an additional writer is required by the technical publishing group with the Division. The job entails liaising with programmers on specific projects with a view to providing accurate and readable User and Support documentation.

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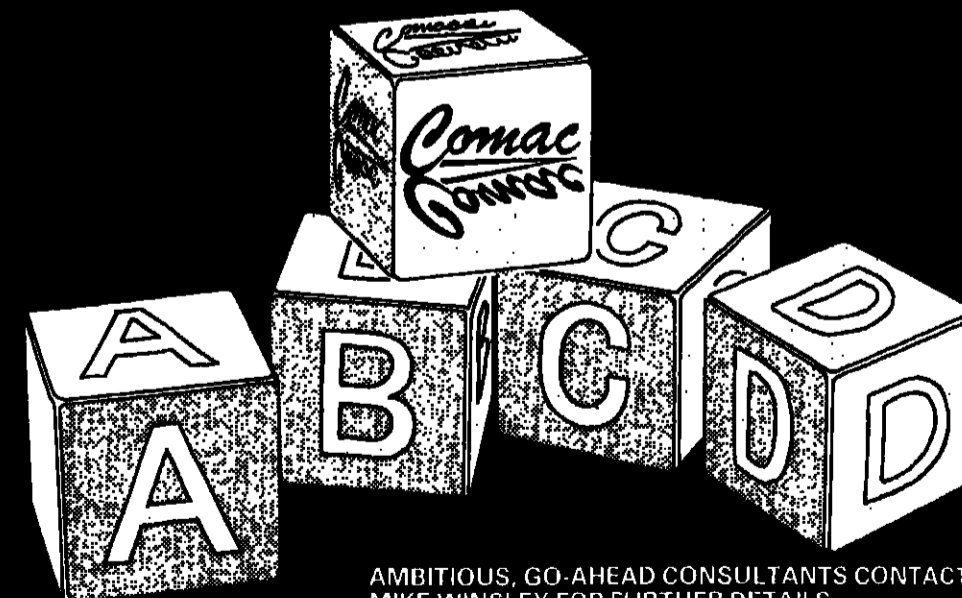
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JOBS IN LONDON

London has never had it so good

ALMOST every other week we read of a new computer company being set up in the country, usually within reach of the M4 motorway, or of a large company that is moving out of London to cut down on costs. But what of the companies and opportunities left in the capital?

Things have never been so good in London for DP staff as the consistent message coming in from all quarters, be it finance institutions, software and systems houses, local government, the public sector and industry.

Systems house Data Logic, which is based in the Marylebone Road, recently announced that it is to hire 225 extra analyst and programming staff, as well as some engineers and sales staff. And last April Data Logic bought up Allergo Business Systems and took an extra 135 staff on board.

Logic, which is soon to offer its shares to the public on the Stock Exchange, is another London software house that has recently been boosting its intake. In August it recruited 125 graduates and the company expects to maintain a high annual intake.

Another large software house, CAP, has a "hefty intake of trained graduate programmers each year," according to personnel manager Tony Knott. "We also have offices outside London as well, and if our staff do eventually want to move out of London, they can do so within the same company."

The software and systems houses offer a wide variety of work, with a regular changeover of tasks and clients, and often opportunities to work with a range of machines.

"The financial institutions, banks and insurance companies in the City of London employ a large number of DP staff, and while the range of tasks might be more limited than in software houses,

John Riley discovers that DP staff are in great demand in the country's capital



Companies in London are beginning to feel they have survived the recession.

computer staff working in the financial environment get the best perks.

According to a recent survey published by the market research company, Computer Economics, DP staff in financial institutions get better life assurance cover, more assisted mortgages, and more non-contributory pensions than their counterparts in other sectors of industry.

"They all get either direct loans or subsidised mortgages, and life assurance cover averages three to

four times their annual salary, compared with the computer industry average of two to three years' salary.

With those incentives, and the high cost of housing in London, the financial institutions have little trouble finding staff. "We haven't experienced any difficulty in recruiting people," said a spokesman from the Prudential, which employs around 500 DP related staff, "although there is a recognised shortage of good calibre people everywhere. At the higher ranges

we look for people with specific skills and use contract staff to tide us over."

"The insurance industry is going through fundamental changes with computerisation and reorganisation, and with substantial investments in networking and on-line facilities," he continued, "there is a continual need for additional staff."

The financial perks are a strong incentive for staff to stay in the financial institutions. "We tend not to get job hoppers," said the

Prudential spokesman, "and our wastage rate is lower than elsewhere."

However, there are signs that increased use of more complex computer communications may result in more data processing taking place in remote locations outside London in the future.

The public sector cannot compete with the perks offered by the financial institutions, but offer more relaxed working conditions, job security and wide ranging experience, as well as continual

training on a wide range of equipment.

A spokesman from the University of London Computer Centre said: "It is difficult to attract people to London. Most of our applicants are from within the London area, and most of those who apply from outside are married males."

"It is virtually impossible to locate married people into London," he continued, "even with an increase of £3,000-£4,000 a year with the house prices and the cost of travel, they don't feel it's worth their while."

The public sector is more disposed towards recruiting unskilled staff or those from TOP training courses, especially those joining the computer industry in their second career. That is partly to compensate for its difficulties attracting skilled people from industry, although several London Borough DP managers have reported success in recruiting from the commercial world.

Although other sectors than their own staff, these are usually graduate trainees straight from universities. Sometimes, they do consider more mature people with relevant experience in the relevant industry and train them up.

Earlier this year DP staff turnover in the London area was slow, particularly among manufacturing companies, but also in software and systems houses and the financial sector.

However, over the year the number of jobs has been on the increase. Companies are beginning to feel they have survived the recession. They are investing in new or additional computer power, make long term economies, and the long term jobs but also contract work.

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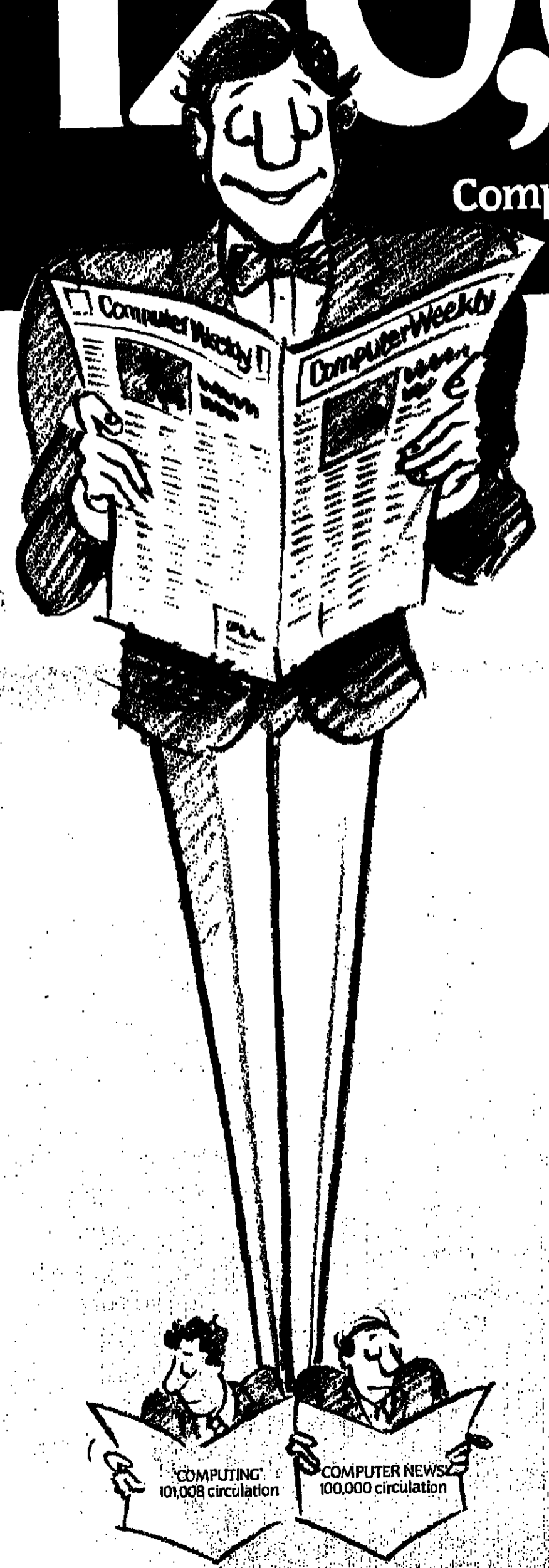
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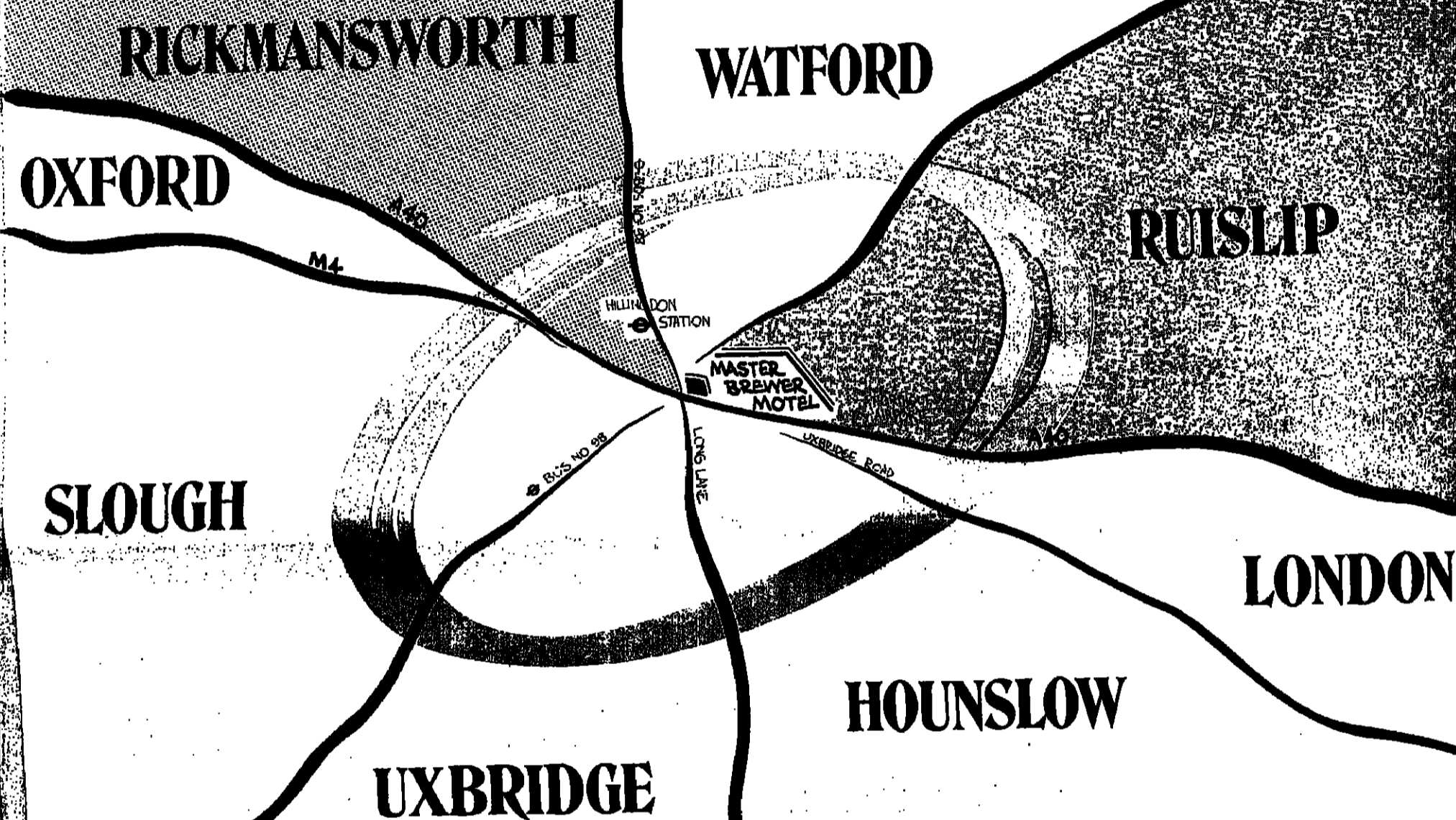
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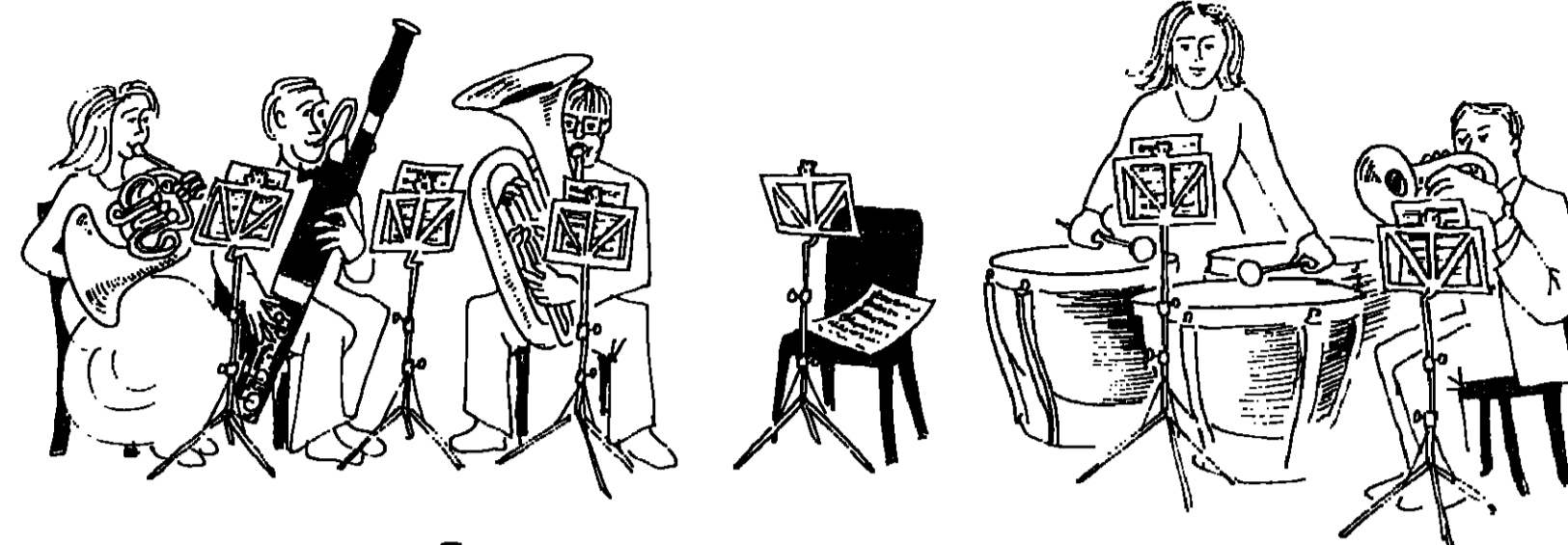
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University Degree Computer Science, six years' experience in the design, coding and maintenance of application programming on D.G. equipment. Familiar with NOVA, ECLIPSE AND MVs - AOS, RDS and INFOSII. Good knowledge of ASSEMBLER, BUSINESS BASIC, COBOL and RPGII essential.

FIELD ENGINEER

University Degree in Electronics, six years' experience in D.G. equipment installation, trouble-shooting and repair. Exposure to communication networks a must.

Candidates, preferably Moslems, will be required to travel throughout SAUDI ARABIA. Both positions are offered on a one-year contract basis; attractive tax-free salary and free accommodation. Applicants should send résumé, including address and telephone numbers of references together with copies of diplomas, to the following:

SCCMS
P.O. BOX 42783
RIYDAH 11651
KINGDOM OF SAUDI ARABIA

(8010)

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Even Silicon Valley shops here! Our client proudly boasts credit for major "firsts" in computer technology. This British world leader recognises the importance of investment in new projects and products. Correspondingly they have now created real-time mini/micro opportunities for:

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Call Keith Wells for an early interview NOW on 01-543 4844 or 04864 12675 evenings/weekends.

ALLTRONICS PEOPLE (AGY)

(5882)

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Protel is an exciting young company providing computer systems for the Television Broadcast industry worldwide.

We have vacancies on all levels for programmers to design, implement and document realtime application software to run on 16 bit microprocessor based autonomous and networked computer systems. The systems perform machine control, text and file handling operations implemented on a large scale high speed local area network.

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**Principal Engineer
Management Systems**

Salary Scale £13,725 - £15,033

This vacancy arises due to the imminent departure of the present postholder, who with other colleagues is setting up a private company.

In West Sussex, considerable investment has been made in VAX and IBM computers and specialised peripheral hardware for graphics and data collection. Computer use extends from engineering design and drafting through information systems to financial, management and control systems.

You will be responsible for formulating policies for the expansion of computer use and office automation, and for the provision of a computer based management information service.

Under development is a Resource Management System for the administration and operation of the Direct Labour Organisation, and fourth generation software tools are being used to improve development efficiency. This project involves fundamental changes in working practices within the department.

You will need to show considerable management ability and possess an appropriate qualification for this demanding post in a technical environment.

Removal, resettlement and lodging allowances are payable in approved cases and temporary accommodation may be available.

Further details with an application form are available from County Surveyor, County Hall, Chichester, West Sussex, PO19 1RH or telephone (0243) 777973 quoting reference SM1205. Closing Date 31st October 1983.

West Sussex
COUNTY COUNCIL



(5988)

**RUSHMOOR BOROUGH COUNCIL
Borough Treasurer's Department****PROGRAMMER**

Grade: Scale 2-Scale 6 (£5,640-£8,712)

Applications are invited for the above post from programmers with two years practical experience in a working environment using either RPGII or COBOL.

The Sperry 90/30 currently used will be replaced by a Sperry System 80 Model 8 in 1984 and an extensive development programme is planned with a network of micros and terminals in all departments of the Council.

Conditions of service include generous relocation payments, flexible working hours and 20 days' annual leave. The starting salary will be dependent on experience.

Application forms and job description available from the Personnel Officer, Council Offices, Farnborough Road, Farnborough, Hants, to be returned by 24th October, 1983.

Borough of RUSHMOOR

(5983)

DISTRICT TREASURER'S DEPARTMENT**Senior Analyst/Programmer**

Salary on Grade PO11 (1-5) - £9,945-£11,082 per annum + £270 London Weighting

Applications are invited for this newly-created post within the computer section of the Treasurer's Department. The Council is in the process of obtaining a Honeywell DPS 675 and is a member of a consortium of eight districts linked to the DPS 6/52 Honeywell mainframe of Essex County Council.

It is likely that the successful applicant will have had at least three years' programming experience complemented by a year of system analysis. Though not essential experience of Honeywell DPS 6 installations including TPS and/or Screenwrite would be an advantage.

Situated in the south of Essex, the district incorporates the major portion of Epping Forest and is served by the M11 and M26 as well as offering Central Line access to the heart of London. Housing and relocation expenses will be considered in appropriate cases.

Application form and job description may be obtained from District Personnel Officer, 323 High Street, Epping, Essex CM16 4BZ. Telephone Epping 77844. Ext. 207. Closing date: October 25, 1983.

Please quote T245

Epping Forest
District Council

(5949)

**Highways and
Transportation Department**

The following staff are required for the Computer Unit in the Traffic Systems Group. The unit operates a SEL 32/7760, 2 PDP 11/30 mini-computers as well as micro-computers and provides support for the County Council's most renowned Urban Traffic Control system as well as general computer support for a wide variety of applications in the Transportation Branch of the Department.

Computer Manager

£9,945-£11,703 to head the Unit. Applicants must have proven management abilities as well as a good analysis/programmer background. Experience in database technology and/or computer graphics would be an advantage. (Ref: W.R. 40).

**Assistant Analyst/
Programmer**

£5,493-£9,660. Applicants must have a good working knowledge of FORTRAN and BASIC. (Ref: W.R. 78/79). Details from Mr M. Bounner, Traffic Systems Manager, on Maidstone 671411 ext. 3824.

Further information and application forms, returnable by 28 October, from the County Surveyor, Sandling Block, Springfield, Maidstone, phone 671411 ext. 3752.

Interviews to be held on 9 and 10 November, 1983.

KENT COUNTY COUNCIL

**North-East London Polytechnic
Computer Centre****Programmers (2 posts)**

Vacancies exist for Programmers in the Computer Centre. Applicants are normally expected to possess a degree or equivalent qualification in a numerate discipline and have at least two years' programming experience.

A wide range of projects are undertaken in the Centre and include scientific, business and database applications. The facilities provided by the Centre are based on Prime computing equipment within the framework of a large-scale time-sharing environment.

Successful applicants will be based at either the West Ham Precinct, Romford Road, London, E 16, or the Barking Precinct, Longbridge Road, Dagenham, Essex.

The inclusive annual salary will be on a scale from £8,957 to £11,136 according to age, qualifications and experience.

For further details and an application form, please contact the Personnel Officer, Aisle House, 185-186 High Road, Chesham, Bucks, HP8 3JL. Telephone 0494 7722. Extension 3121/3116, quoting reference number 15/8/83. Closing date for receipt of application forms: October 27, 1983.

NELP North East London
Polytechnic

(5947)

**UNIVERSITY OF CAMBRIDGE
SYSTEMS ANALYST/
PROGRAMMER**

Applications are invited from suitably experienced candidates for the above post in the Administrative Data Processing Section. The section provides Student Records, Accounting and Payroll services, both batch and on-line and is presently equipped with an ICL 2904/80 through enhancement is being considered. Applicants must have considerable programming experience in COBOL and experience in on-line systems. A knowledge of ICL computers would be an advantage.

The person appointed will, in the first instance, be responsible for the development, implementation and thereafter the maintenance, of a new Student Records system and experience of University procedures may be helpful.

Salary will be in accordance with Computer Officer Grade II - £8,976 p.a. to £12,546 p.a.

Applicants should forward details of their career to date, their age, present salary and the names and addresses of two referees, in confidence to: The Treasurer, University Financial Board, The Old Schools, Queensbridge, Cambridge CB2 3RQ, to arrive not later than 8th November, 1983.

(5972)

Nottinghamshire County Council**Arnold and Carlton College of
Further Education****LECTURER GRADE I**

£5,840-£8,735

COMPUTING

Required for January 1984, or as soon as possible thereafter, a Lecturer Grade I in computing, to join an enthusiastic team of staff providing a high standard of computer education to 16-year-olds and over. Applicants should be well qualified in the subject and should have recent computing experience in the use of small computer systems. The post will involve teaching on a wide range of courses including 'A' and 'O' level computing, science, the BSC/TEC Diploma in computer studies and part-time evening courses. The teaching of computer programming will be involved and applicants should have a thorough knowledge of at least two programming languages, preferably BASIC and COBOL.

Application forms and further particulars are available from the Principal of the College, Digby Avenue, Mansfield, Nottingham NG20 2SR. Telephone: Nottingham 878503 to whom application forms should be returned by 26th October, 1983.

Entry point on the Lecturer Grade I scale will be according to qualifications and experience. An Equal Opportunity Employer.

(5984)

**Inner London Education Authority
SOUTH THAMES COLLEGE
Wandsworth High Street, London SW18 2PP****Department of Business and Computer Studies****Post Ref: BC87-93****LECTURER I**

Required for January 1984 or as soon as possible, to teach Mathematics and Computing to A-level, BSC/TEC Computer Studies and City and Guilds 7467/747 courses. Applicants should be familiar with the major computer languages and a knowledge of numerical computation and/or interfacing would be an advantage. Applicants should be suitably qualified and teaching experience is desirable.

Salary scale: On an incremental scale within the range of £5,840-£8,735, starting point depending on qualifications, training and experience (plus 55% Inner London Allowance).

Application form and further details obtainable from the Principal's Secretary, returnable within 14 days of appearance of advertisement. Please quote post reference number and enclose stamped addressed envelope.

SLA is an equal opportunities employer

COUNTY TREASURER'S DEPARTMENT

The County Council with offices in Barnsley have two 2966 4 MB ICL Computer Systems supporting considerable real-time, remote batch and conventional batch processing running under DME/G3 operating system.

Work is currently in hand to introduce message routing software on the 7906 FEP to give terminal access to both systems.

Applications are invited from suitably experienced persons for the following post:

Systems Analyst

Grade Sc5/6

POST REF: T261

Salary £7,191-£8,712

Applicants should have wide technical experience preferably using data base techniques. The successful applicant will be involved in the development of a wide range of systems for all departments of the County Council on both mainframe and mini/micro computers (whichever is the best medium).

The County Council operates a system of flexible working hours and payment of removal expenses, lodging and travelling allowances will be made in appropriate cases.

Please write for an application form, quoting the post reference, to the Chief Executive (Personnel), South Yorkshire County Council, County Hall, Barnsley S70 2TN or telephone Barnsley (0226) 86141 ext. 266.

Closing date for applications will be 31st October, 1983.

South Yorkshire County Council is an Equal Opportunities Employer

**South Yorkshire
County Council**

(5979)

**POWYS COUNTY COUNCIL
EDUCATION DEPARTMENT
MONTGOMERY COLLEGE OF FURTHER EDUCATION
NEWTOWN**

Required to commence in January, 1984, or as soon as possible thereafter.

SENIOR LECTURER

to assume responsibility within the Department of Industrial Technology for all computer and mathematical-based education.

The position is one which would require gifts of leadership and sound teaching aptitude as well as experience of computer application over a fairly wide field. (Ref: 22).

Application forms and further details obtainable from the Principal, Montgomery College of Further Education, Llanidloes Road, Newtown, Powys, to whom completed forms should be returned within 14 days of the appearance of this advertisement.

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UNIVERSITY OF KENT AT CANTERBURY**RESEARCH FELLOW:****MICROSTRIP CIRCUIT****MODELLING**

Applications are invited for a three-year Research Fellowship in the Electronics Laboratory. The successful applicant will be engaged on a project supported by the Science and Engineering Research Council and Plessey Research (Caswell) for the development of models for high frequency (20-100 GHz) microstrip circuitry.

The research programme will be carried out in collaboration with Plessey Research (Caswell) where most of the measurements will be carried out. Salary will be in the range £7,190-£8,530 on the University scale. Applications with details of qualifications and experience should be sent to the

Senior Assistant Registrar, Faculty of Natural Sciences, Canterbury Laboratory, The University, Canterbury, Kent CT2 7NH by 21 October 1983, quoting reference A55/83.

(5985)

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If you look around you will see there are lots of job opportunities for experienced computer industry salespeople, but in reality they are no more than clones of each other, lost in the static survival of the computer establishment or the transient euphoria of micro-computers. Many are acceptable to those already committed to changing employer, but offer little incentive to those successful salespeople who would like to advance their careers if only the risk was not so profound. In contrast, this is one of those truly rare opportunities that must appeal to every accomplished salesperson within the computer industry.

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- * We dominate one of the fastest growing areas of computing.
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- * We get so many enquiries, there is virtually no need for prospecting.
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- * Our continual investment in R & D keeps us far ahead of competition.

If you add to this the wide scope for personal advancement within our young and fast growing company, plus typical earnings that are almost double the industry average, and compare it with your present situation, you will surely forgive us for saying this is a very special opportunity indeed.

Success has now created additional job opportunities in

**LONDON and the SOUTH
The MIDLANDS, NORTHERN ENGLAND**

for experienced and well accomplished salespeople.

Applicants must have significant past or present experience of selling for a major mainframe or minicomputer manufacturer, or perhaps a large scale bureau specialising in engineering or industrial applications, ideally with experience of the manufacturing industry. Above all they must have the proven ability to negotiate high value sales at board level within major companies and institutions.

In return we offer on target earnings of £38,000 with a high minimum income guarantee for the first year of employment, plus a 2 litre company car and other fringe benefits including health insurance, pension, luncheon vouchers, etc.

Please contact Alasdair Scott (London) or Roger Dodd (Lichfield) quoting reference WSB/103. This is undoubtedly the best opportunity for advancing your career that is likely to be available for many months to come.

(5940)

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W.P./DATACOMMS	LONDON/HOME COUNTRIES	£8½k

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Children's publisher planning expansion into new educational software requires creative young program designers and programmers with experience of games and/or computer-aided learning programs.

Write to: C.V. Inc., Usbourne Publishing, 20 Dorset Street, London WC2E 7JN. Tel: 770 3015.

(5980)

**BOX
NUMBERS**

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Box Number

also Computer Weekly

Quadrant House

The Quadrant

Burton, Surrey GU24 0AB

**Computer
Operations Controller**

Already a clear market leader in horticultural products for both amateur and professional growers, Fisons Horticulture has ambitious plans for further developments. Keeping ahead of this expansion is the development of sophisticated management information systems.

To support these the Division operates on ICL mainframe and distributed network supplemented by micro computers on local networks.

To meet increasing demands we now have a challenging opportunity for an operations controller to co-ordinate and direct the work of a small operations team. Considerable liaison with development staff and users is involved, therefore management skills and abilities beyond those of a shift leader are essential.

Our ideal man or woman will probably be aged 25-35 with a strong technical background in computer operations, embracing supporting on-line communications network, and experience with ICL mainframe equipment.

A competitive starting salary will be supported by an excellent benefits package which includes relocation assistance where appropriate.

For further details or an application form telephone me now - or write enclosing a comprehensive c.v.

Roger Down, Fisons Horticulture

Division, Paper Mill Lane, Broomfield,

Ipwich IP8 4BZ.

Tel: Ipswich (0473) 830492.

FISONS
Horticulture

SALES BIT

Quality of Management - 68

**How to cope
with danger
of rejection**

PROSPECTING, above all other selling activities, is the one for which salespeople have least liking.

The fear of personal failure is a force that has repelled many people from taking up a career in selling and there is no aspect of the occupation more likely to generate recurrent rejection than cold canvassing and telephone prospecting.

But it is an acceptable, even expected phenomenon that successful salespeople learn to live with. They interpret "No" as a temporary situation that refers only to the matter in hand and does not in any way negate the possibility of future business opportunities; neither does it imply personal inadequacy.

It may be, in a particular line of business, that 10% success - or 90% rejection - could be interpreted as highly successful pioneering activity. It obviously depends upon the nature of the product and the pre-qualification of prospects.

Telephoning 30 prospects and getting only three appointments from serious prospects would be disappointing if you were selling printer ribbons, but rather exciting if you were peddling

other clients, but what is even more extraordinary is the complete lack of any need for the salesforce to generate new prospects at all. They literally have more prospects than they can handle, so intelligent prospect qualification is a critical aspect of the salesman's activity.

"We put out a press release the other day," the national sales manager said, "and having extracted all the schoolboys and paper hoarders we stopped counting at 2,300 serious enquiries."

I mention this because it is totally untypical, yet one which many salespeople expect; so that when they are accused of having too few new qualified prospects they automatically blame the company in general and the marketing department in particular for not producing them in the first place.

The company in this case is the market leader in a new, glamorous and fast expanding area within a total industry that is growing faster than any other. Yet this has to be a temporary phenomenon: their competition will ultimately increase, their market will eventually "plateau" and before long their salespeople will have to adapt themselves to the real world where the "hunters" win and the "skin-

ners" don't always get into the race.

The following day I was discussing the various problems and opportunities related to mainstream sales prospecting with another of our clients. He is managing director, but was previously head of sales and has had many years of success as a territory salesman. So he, more than most, appreciates the various implications of sales prospecting as well as having his own special ideas for overcoming some of the problems involved.

One approach of his that appeals to me is his system for "blitz" prospecting of selected territories or selected markets. From time to time one of his sales teams takes a day off from the field and every salesman dedicates his entire time to telephone prospecting for a selected salesman.

The choice could depend on the comparative state of individual prospect portfolios, special market opportunities or whatever. Clearly, some fairly comprehensive qualification of paper prospects has to occur before the exercise is put into effect, but the benefits can be considerable.

It puts pressure on the salesman concerned to commit himself to organising a thorough prospecting programme. It creates a situation of healthy internal competition in terms of who can prove himself to be the most effective canvasser. It is likely to generate a larger prospect portfolio in less time than the salesman could for himself.

Alan Williams

**PUZZLE
ANSWER**

2 3 5
2 3 5
2 3 5
6 9 7 5 5
5 0 5 1 5 3 +

6 4 5 3 6 8

These thoughts were brought into my mind as a result of a couple of client contacts I made a few days ago.

The first is worth mentioning because it is so unusual within the present day computer industry. It is rare enough to have a client who wishes to add new salespeople to a salesforce that has an average earnings level double that of all our